FAO Vessel Records Management Framework

Fishing Vessels Finder

user manual (version 1.2)

Table of Contents

1. Introduction....3
2. System requirements....3
3. Limitations of use....4
4. Access to the application....4
5. Capabilities....5
6. Common interface components....7
  6.1 Page header....7
  6.2 Page footer....8
  6.3 Search filters panel....8
  6.4 Search results panel....8
  6.5 Participating vessels details panel....10
7. Search....11
  7.1 Statistics driven search panel....11
  7.2 Quick search....12
  7.3 Advanced search....14
    7.3.1 Grouping criteria....15
    7.3.2 Sources....15
    7.3.3 Timings....16
    7.3.4 Markings....18
    7.3.5 Basic criteria....18
    7.3.6 Radio signals....22
    7.3.7 Registrations....23
    7.3.8 Fishing licenses....23
    7.3.9 Structure....24
    7.3.10 Engines....25
    7.3.11 Authorizations....26
    7.3.12 Display options....29
  7.4 Basic search....29
8. Vessel details....32
  8.1 Historical details....32
  8.2 Current details....37
  8.3 Timeline....38
  8.4 Vessel pictures....39
  8.5 Vessel tracks....42
  8.6 Common vessel details controls....46
9. Advanced usage tips....47
  9.1 Layout tweaking....47
  9.2 REST API....53
    9.2.1 Vessel details by UID....53
    9.2.2 Vessel details by IMO number....53
    9.2.3 Vessel details by EU CFR....54
    9.2.4 Vessel details by original source identifier....54

1 Introduction

The FAO Fishing Vessels Finder (FVF) is an online tool to locate information on individual fishing vessels (including supporting vessels, carriers, fishery research vessels and inspection boats) that are disseminated, or were disseminated in the past, by a range of national, multi-national, regional and international organizations.

As the data are being compiled and updated from diverse publicly available sources, they are disseminated as such, with due identification of their corresponding source and data owner.

A standardized and flexible structure was adopted in order to accommodate for the diversity of contents and the lack of standard formats common to all the sources being compiled. The adopted structure incorporates all of the fields commonly used in association with individual fishing vessels data, in addition to authorization types and dates, authorized species and fishing areas.

Powerful code-mapping capabilities were developed and used to support standardized searches on coded fields that may vary across data sources (e.g., ports lists, vessel types, gear types, physical dimensions, etc.). Matching algorithms were also developed and applied over broad subsets of discriminating data fields in order to detect duplicate vessels within and among data sources.

Once the different sources are matched against each other, a given vessel can be judged as equivalent (or not) to another vessel, on the basis of their respective combinations of identifiers and features (e.g., national vessel ID or registration number, EU identifier, IMO number, name, international radio call sign, etc.).

FAO has made its best effort in identifying potential duplication of vessels disseminated by multiple sources (e.g., tuna organizations, other RFBs and RFMOs, national registries, deep-seas authorized vessels lists, etc.) within the range allowed by the available information and resources allocated for this task.

The FVF is an example of the results achievable with the adoption of the **Vessels Record Management Framework**, a project sponsored and supported by the *Japanese Trust Fund* [1].

2 System requirements

The FVF is a publicly accessible, rich web application: as such, it only requires a desktop PC (as well as a modern smartphone or tablet) equipped with a web browser and a working Internet connection. No installation of third party software or components is required and no limit on the hosting operating system do exist.

However, due to the richness of its user interface, we advice users about accessing and browsing the FVF by means of a modern, *W3C-compliant* web browser [2].

1 See also: http://www.fao.org/fishery/statistics/software/fvrmf/en
2 Microsoft Internet Explorer users should be warned that version 7 and lower are not supported.

Cookies and Javascript must be enabled in your browser to let the application work as expected (regardless of your browser of choice).

Also, we recommend using a screen resolution of at least 1280 x 1024 pixels for a satisfying user experience.

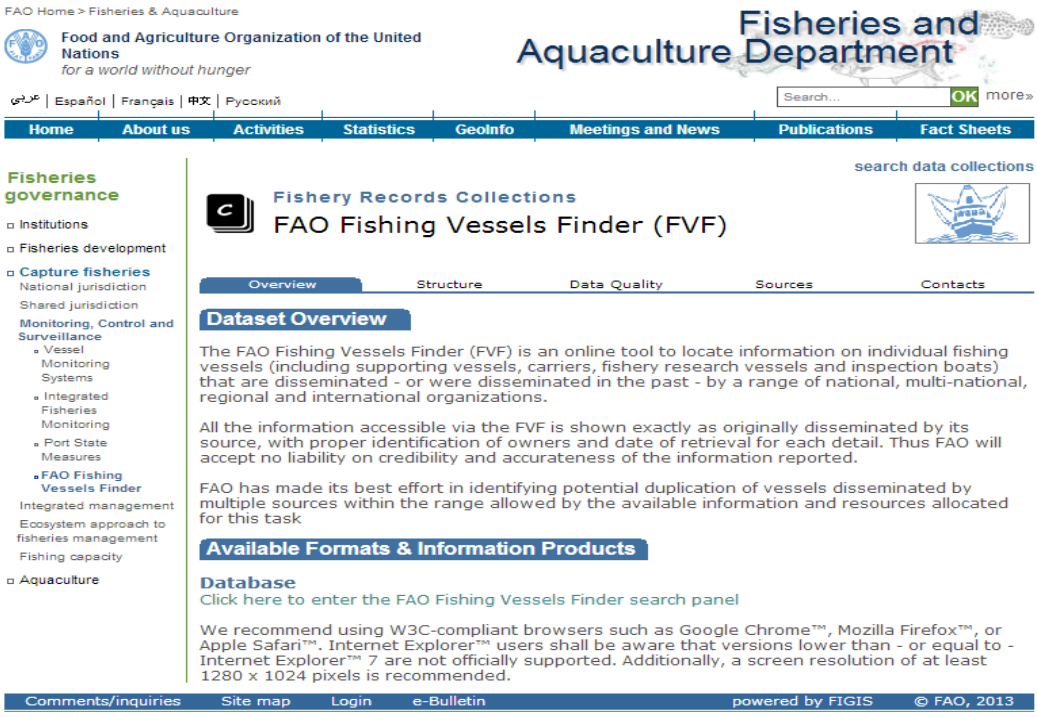
3 Limitations of use

FAO assumes no responsibility for the accuracy or consistency of the data. The information provided in no way implies that a given vessel is authorized to operate and / or that is part of an officially recognized fleet. Users should apply their own judgements when using the information for their particular purposes.

All the information accessible via the FVF is shown exactly as originally disseminated by its source, with proper identification of owners and date of retrieval for each detail. Thus FAO will accept no liability on credibility and accurateness of the information reported.

4 Access to the application

The FVF home page is hosted under the FAO / FI departmental pages at the following address: http://www.fao.org/fishery/collection/fvf/en



1: The FVF home page

The tabs under the **FAO Fishing Vessels Finder (FVF)** page heading (*Overview*, *Structure*, *Data Quality*, *Sources* and *Contacts*) will display, when selected, different content sections and the current data status (number of data providers, number of vessel

records per provider, date of last update) .

The link under the *Available Formats & Information Products*, instead, will give you direct access to the standard FVF search panel (*Statistics driven*).

5 Capabilities

In its broader scope, the FVF allows querying the currently collected vessel data by many a vessel attribute, including:

- IMO number,
- EU CFR,
- original unique identifier (source dependent),
- name,
- external marking,
- building year,
- status,
- flag,
- international radio call sign (IRCS),
- MMSI,
- fishing license number,
- registration number and port,
- vessel type
- gear type (both primary and secondary)
- tonnage type and category,
- physical dimension type and category,
- engine power type and category (both for main engine and auxiliary engines),
- authorization issuer, type, issuing country and status (currently or at a given point in time);
- time validity (should attributes be filtered only on their most recent observation, at any point in time or at a given time?)

In addition to this, the FVF is also capable of filtering vessels according to various metadata as:

- original data source,

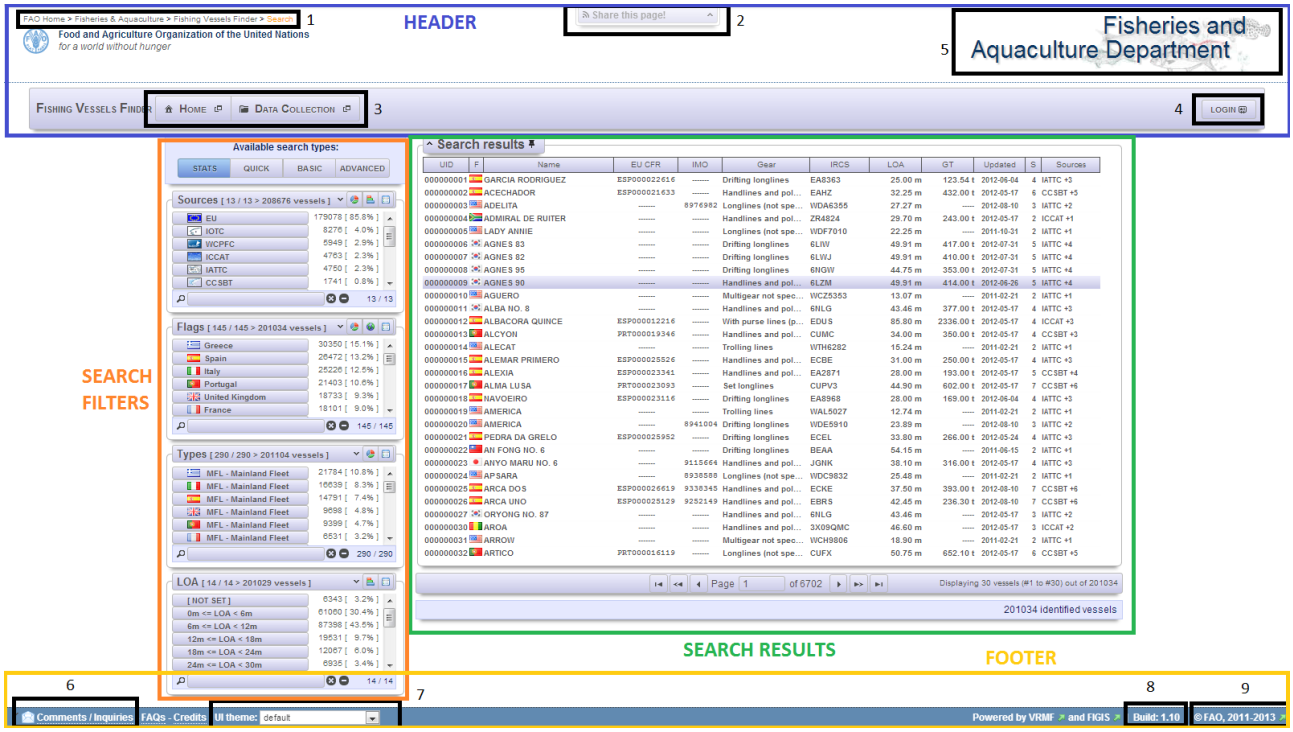
- date of last update,
- duplication status,
- number of sources a vessel appears in;

Identified vessels may eventually be displayed in a number of different ways:

- by showing only the current (most recently observed) values for each attribute,
- by showing the attribute values as they were observed at a given date in time,
- by showing the full accumulation of data in time for each attribute,
- orthogonally to the above modes, by limiting the displayed data to those provided by a selected source only;

This great flexibility (and complexity) in the filtering capabilities lead the design of the FVF interface to provide different type of search features, each feasible for a given category of users (casual, beginner, intermediate and advanced). Nevertheless, also the simplest search feature is capable of providing relevant results of interest to experienced users also.

6 Common interface components



2. The FVF main interface components

6.1 Page header

The header section (outlined by a blue box in picture 2) remains mostly identical throughout the whole set of FVF web pages.

It provides *breadcrumbs* (see box #1 in picture 2) to contextualize and support the FVF web pages navigation and / or the navigation of FAO and FI logically enclosing external web pages. The current breadcrumb, pointing to the displayed page, is highlighted in orange.

It also provides a *widget* (see box #2) to let users share the currently displayed page across a wide set of social networks and information sharing media (Twitter, Google+, Facebook etc.) to increase user-base awareness. This widget can be dragged horizontally to any position of choice, and can be toggled open by clicking on the rightmost icon.

Box #3 provides links to the FVF home page (hosted under the FI web pages, see picture 1) and to the FVF current data provider report. The latter link might be also used to get access to provider specific versions of the FVF focusing on data provided by one source only (more on this later).

The Login button (see box #4) is intended for internal users only and has no general impact on external users (you cannot register yourself to access the FVF as an internal user, nor this will happen in the near future).

Finally, box #5 provides a quick link to the FAO Fisheries and Aquaculture home page.

6.2 Page footer

Also the page footer (outlined by a yellow box in picture 2) remains unchanged throughout the whole set of FVF web pages.

It currently provides links to compose an e-mail to the VRMF / FVF administrator (see box #6), to change the interface theme via a drop-down menu (see box 7) whose selection will remain valid also during subsequent visits to the application, to display FVF version details (see box #8) and to access – as an external link – the FAO general copyright statement (see box #9).

6.3 Search filters panel

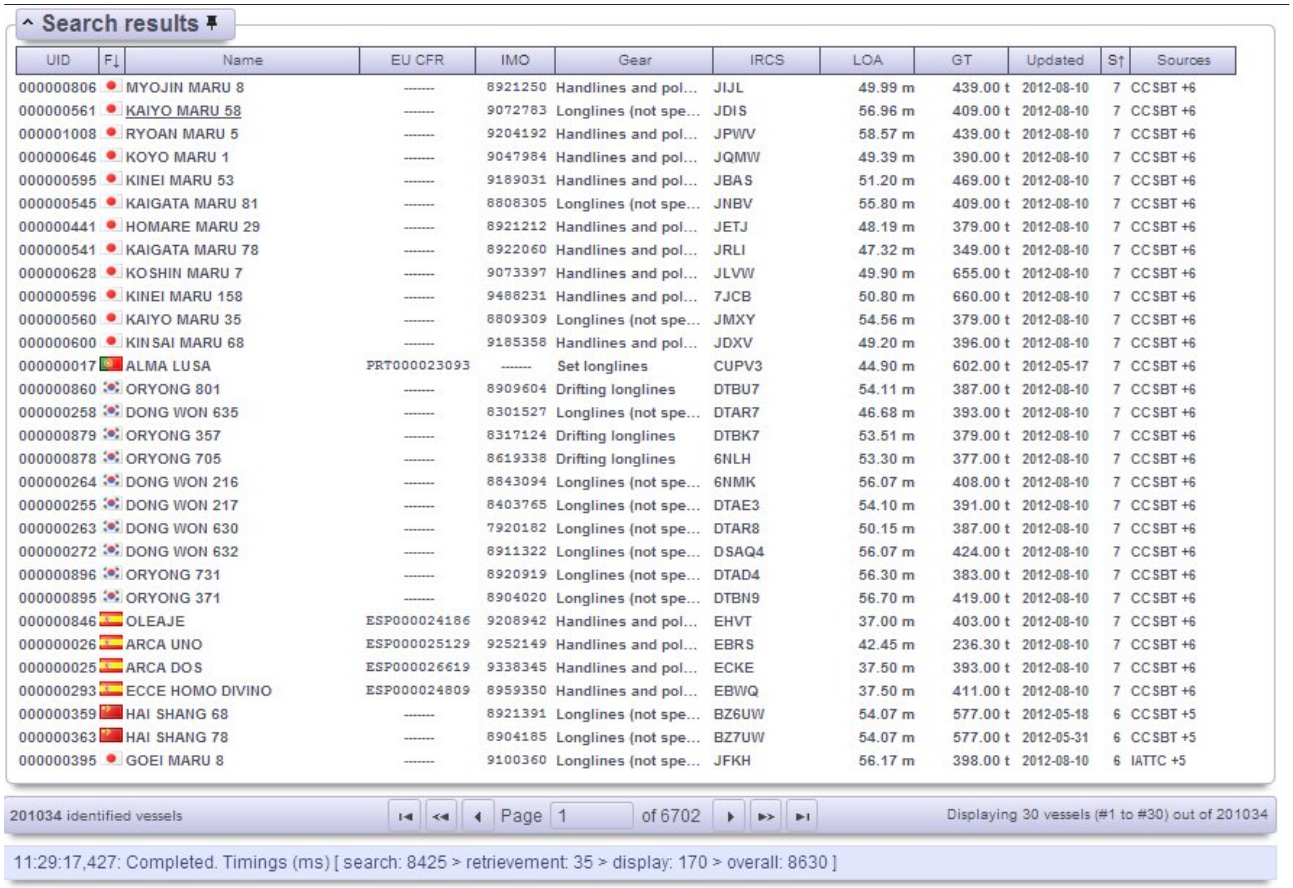
The search filters panel content will actually depend on the chosen FVF search mode, and this can be selected via the '*Available search types*' component placed on top of the search filters panel (outlined in orange in picture 2).

Currently, it can be one of the following:

- ***Statistics-driven****:* vessels are filtered by interactively selecting a data source, a flag, a vessel type and a *length overall* category (this is the default search mode, see section 7.1),
- ***Quick***: users can insert a search term, select one out of four possible vessel attributes the term should apply to (*vessel name*, *EU CFR*, *IMO number* and *International Radio Call Sign*) and a few other criteria as whether to search in the vessel history or just in the most recent vessel details, one or many of the available data providers and one or many vessel flags. Vessels are filtered in real time as users change the search term or the selected search criteria (see section 7.2),
- ***Basic***: users can fill a subset of the most common search criteria (currently the data provider, the name, a vessel identifier, the vessel flag, the international radio call sign, the country of registry and the registration number). Vessels will be filtered accordingly as soon as the user clicks on the 'Search' button (see section 7.3),
- ***Advanced***: this is the most complex yet the most flexible search mode. Users can fill a subset of all the currently available search criteria and vessels will be filtered accordingly as soon as the user clicks on the 'Search' button (see section 7.4).

6.4 Search results panel

The search results panel (see picture 3) displays a subset of the available vessel details for each vessel identified with the currently set search criteria.



UID	F	Name	EU CFR	IMO	Gear	IRCS	LOA	GT	Updated	S	Sources
000000806		MYOJIN MARU 8	-------	8921250	Handlines and pol...	JIJL	49.99 m	439.00 t	2012-08-10	7	CCSBT +6
000000561		KAIYO MARU 58	-------	9072783	Longlines (not spe...	JDIS	56.96 m	409.00 t	2012-08-10	7	CCSBT +6
000001008		RYOAN MARU 5	-------	9204192	Handlines and pol...	JPWV	58.57 m	439.00 t	2012-08-10	7	CCSBT +6
000000646		KOYO MARU 1	-------	9047984	Handlines and pol...	JQMW	49.39 m	390.00 t	2012-08-10	7	CCSBT +6
000000595		KINEI MARU 53	-------	9189031	Handlines and pol...	JBAS	51.20 m	469.00 t	2012-08-10	7	CCSBT +6
000000545		KAIGATA MARU 81	-------	8808305	Longlines (not spe...	JNBV	55.80 m	409.00 t	2012-08-10	7	CCSBT +6
000000441		HOMARE MARU 29	-------	8921212	Handlines and pol...	JETJ	48.19 m	379.00 t	2012-08-10	7	CCSBT +6
000000541		KAIGATA MARU 78	-------	8922060	Handlines and pol...	JRLI	47.32 m	349.00 t	2012-08-10	7	CCSBT +6
000000628		KOSHIN MARU 7	-------	9073397	Handlines and pol...	JLVW	49.90 m	655.00 t	2012-08-10	7	CCSBT +6
000000596		KINEI MARU 158	-------	9488231	Handlines and pol...	7JCB	50.80 m	660.00 t	2012-08-10	7	CCSBT +6
000000560		KAIYO MARU 35	-------	8809309	Longlines (not spe...	JMXY	54.56 m	379.00 t	2012-08-10	7	CCSBT +6
000000600		KINSAI MARU 68	-------	9185358	Handlines and pol...	JDXV	49.20 m	396.00 t	2012-08-10	7	CCSBT +6
000000017		ALMA LUSA	PRT000023093	-------	Set longlines	CUPV3	44.90 m	602.00 t	2012-05-17	7	CCSBT +6
000000860		ORYONG 801	-------	8909604	Drifting longlines	DTBU7	54.11 m	387.00 t	2012-08-10	7	CCSBT +6
000000258		DONG WON 635	-------	8301527	Longlines (not spe...	DTAR7	46.68 m	393.00 t	2012-08-10	7	CCSBT +6
000000879		ORYONG 357	-------	8317124	Drifting longlines	DTBK7	53.51 m	379.00 t	2012-08-10	7	CCSBT +6
000000878		ORYONG 705	-------	8619338	Drifting longlines	6NLH	53.30 m	377.00 t	2012-08-10	7	CCSBT +6
000000264		DONG WON 216	-------	8843094	Longlines (not spe...	6NMK	56.07 m	408.00 t	2012-08-10	7	CCSBT +6
000000255		DONG WON 217	-------	8403765	Longlines (not spe...	DTAE3	54.10 m	391.00 t	2012-08-10	7	CCSBT +6
000000263		DONG WON 630	-------	7920182	Longlines (not spe...	DTAR8	50.15 m	387.00 t	2012-08-10	7	CCSBT +6
000000272		DONG WON 632	-------	8911322	Longlines (not spe...	DSAQ4	56.07 m	424.00 t	2012-08-10	7	CCSBT +6
000000896		ORYONG 731	-------	8920919	Longlines (not spe...	DTAD4	56.30 m	383.00 t	2012-08-10	7	CCSBT +6
000000895		ORYONG 371	-------	8904020	Longlines (not spe...	DTBN9	56.70 m	419.00 t	2012-08-10	7	CCSBT +6
000000846		OLEAJE	ESP000024186	9208942	Handlines and pol...	EHVT	37.00 m	403.00 t	2012-08-10	7	CCSBT +6
000000026		ARCA UNO	ESP000025129	9252149	Handlines and pol...	EBRS	42.45 m	236.30 t	2012-08-10	7	CCSBT +6
000000025		ARCA DOS	ESP000026619	9338345	Handlines and pol...	ECKE	37.50 m	393.00 t	2012-08-10	7	CCSBT +6
000000293		ECCE HOMO DIVINO	ESP000024809	8959350	Handlines and pol...	EBWQ	37.50 m	411.00 t	2012-08-10	7	CCSBT +6
000000359		HAI SHANG 68	-------	8921391	Longlines (not spe...	BZ6UW	54.07 m	577.00 t	2012-05-18	6	CCSBT +5
000000363		HAI SHANG 78	-------	8904185	Longlines (not spe...	BZ7UW	54.07 m	577.00 t	2012-05-31	6	CCSBT +5
000000395		GOEI MARU 8	-------	9100360	Longlines (not spe...	JFKH	56.17 m	398.00 t	2012-08-10	6	IATTC +5

3. The FVF search results panel (in duplicate vessels grouping mode)

In *duplicate vessels grouping mode*, the displayed vessel details are as follow (from left to right):

- **UID**: the vessel's *Uniform IDentifier* (internal identifier shared by all distinct vessels identified as being equivalent to the same vessel)
- **F**: the vessel's flag (move the mouse pointer over the image to see the flag country name)
- **Name**: the vessel's name (when available)
- **EU CFR**: the vessel's EU CFR identifier (when available)
- **IMO**: the vessel's IMO number (when available)
- **Gear**: the vessel's primary gear (when available)
- **IRCS**: the vessel's international radio call sign (when available)
- **LOA**: the vessel's length overall in meters (when available)
- **GT**: the vessel's gross tonnage in metric tons (when available)
- **Updated**: the vessel's date of last update (or incorporation in the database)

- **S**: the number of data sources among which the vessel appears as a duplicate
- **Sources**: the list of data sources among which the vessel appears as a duplicate (move the mouse pointer over the text to see the full list of data sources)

When the *duplicate vessels grouping mode* is **not** enabled, the first column (*Uniform IDentifier*) will be replaced by the ID (*internal IDentifier*) column.

Except for results returned by the '*Quick*' search mode (see section 7.2), identified vessels may be sorted according to each of the displayed details. To set the sorting criteria for a given detail, users should click on the corresponding column header. The sorting state changes at each click from the default state (not sorted) to ascending sort and then descending sort.

Multiple sorting criteria may be selected by holding the SHIFT key while clicking on a column header.

Please note that in any case, the displayed vessels' details are always the more recent details available for each identified vessel among all the sources it appears in.

Interaction with the search results is limited to:

- sorting criteria selection
- result set navigation (see bottom panel in picture 3)
- vessel details selection (by clicking on a vessel's name, see section 8)
- participating vessels details display, when in *duplicate vessels grouping mode* (by clicking on a vessel's UID, see section 6.5).

6.5 Participating vessels details panel

This panel is accessed by clicking on a vessel's UID (when in *duplicate vessels grouping mode*) among those available in the search results panel.

This action will open a new panel displaying the same vessel details as in the search results, plus a set of additional informations related to all the vessels sharing the same UID (vessels appearing as duplicates among multiple sources).

It has the purpose of providing a quick look at the vessel details as reported by each of the sources the vessel has been identified as a duplicate in. It also shows – for each participating vessel – the original source identifier (under the Source ID column).

These records cannot be sorted and clicking on a participating vessel name will open a new browser window pointing to the original source details for the vessel (when the original source provides a web interface to display these data).

The 'Back to search results' button will bring users back to the search results panel.

Participating vessels for UID #000000002

Source	Source ID	F	Name	EU CFR	IMO	Gear	IRCS	LOA	GT	Updated
CCSBT	4529		ACECHADOR	-------	-------	Drifting longlines	EABX	39.60 m	432.00 t	----------
EU	ESP000021633		ACECHADOR	ESP000021633	-------	Drifting longlines	EABX	39.60 m	432.00 t	----------
IATTC	6355		ACECHADOR	-------	-------	Longlines (not spe...	EAHZ	32.25 m	-----	----------
ICCAT	ATEU0ESP00426		ACECHADOR	ESP000021633	-------	Handlines and pol...	EABX	39.60 m	275.10 t	----------
IOTC	IOTC000197		ACECHADOR	-------	-------	Drifting longlines	EABX	39.60 m	432.00 t	----------
WCPFC	5265		ACECHADOR	ESP000021633	-------	Gear not known or...	EABX	39.60 m	275.10 t	----------

BACK TO SEARCH RESULTS

4. FVF participating vessel details (for vessel with UID #000000002)

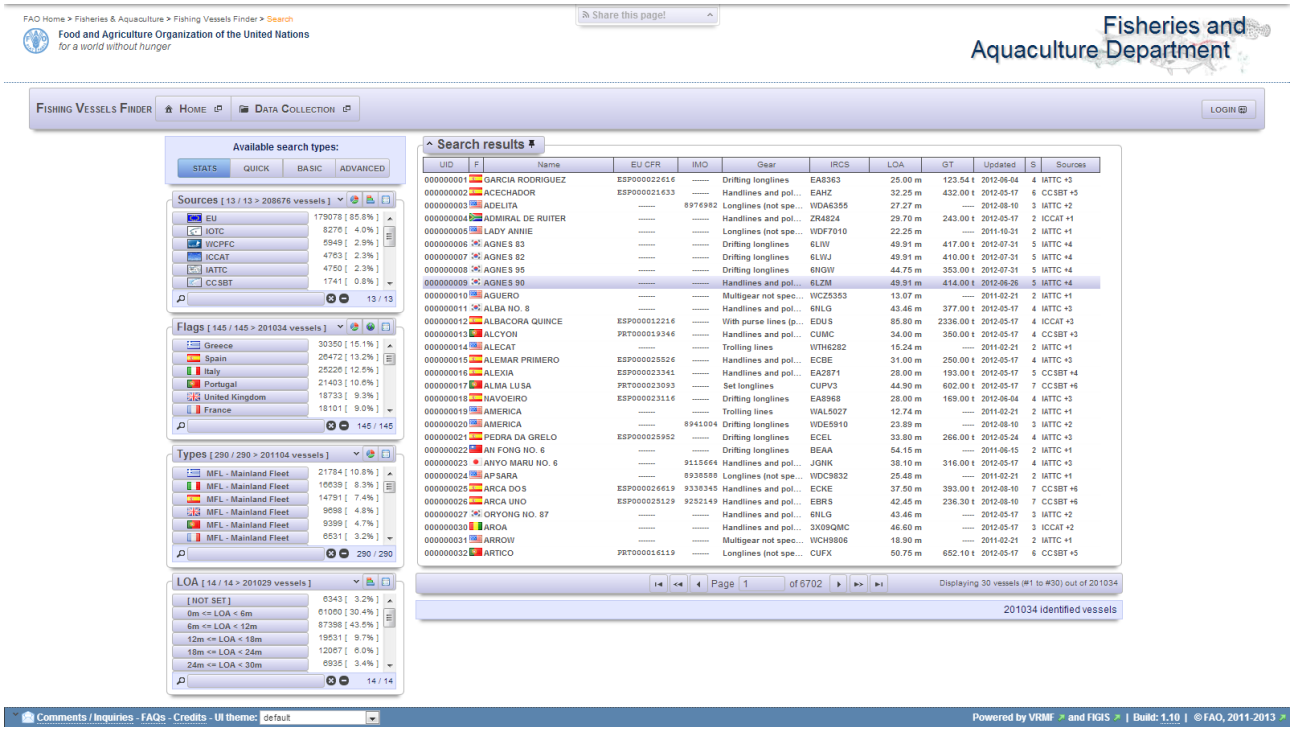
7 Search

Vessels identification in the FVF can be performed in four different modes, by selecting one option among the 'Available search types' on top of the search panel (see picture 2).

Following are the details (and basic concepts) for each of the four search types.

7.1 Statistics driven search panel

The *Statistics driven* search panel (labelled ***STATS*** in the search type selector: see section 6.3) is the default search panel for the FVF. It can be accessed directly via this URL: http://www.fao.org/figisvrmf/finder/search/#stats and it allows searching for vessels by selecting a set of data sources, a set of flags, a set of vessel types and a set of LOA (*Length OverAll*) categories.



5. The FVF statistic-driven search panel

The results will include all the **grouped** vessels **currently** matching the selected criteria.

Changing the selected entries – in each filtering criteria panel – will force the system to perform a search and eventually display the vessels matching the currently selected criteria. Additionally, each criteria panel but the sources' one, will update its content according to the entries selected in the previous panels, in terms of available criteria values and number of vessels matching each of these criteria.

Thus, selecting a set of **sources** will trigger updates of the available **flags**, **vessel types** and **LOA categories** according to the selected sources, and then perform a search with this criteria set (selected sources).

Selecting a set of **flags** will trigger updates of the **vessel types** and **LOA categories** according to the selected sources and flags and then perform a search with these criteria set (selected sources and flags).

Selecting a set of **vessel types** will trigger updates of the **LOA categories** according to the selected sources, flags and vessel types and then perform a search with these criteria set (selected sources, flags and vessel types).

Selecting a set of **LOA categories** will not update any panel and will only perform a search with all the criteria currently set (selected sources, flags, vessel types and LOA categories).

As in the general search results panel, users can navigate in the result set by using the navigation box just under the vessels' details and display any vessel details by clicking on a vessel's name. Also, sorting criteria are enabled as already described in section 6.4.

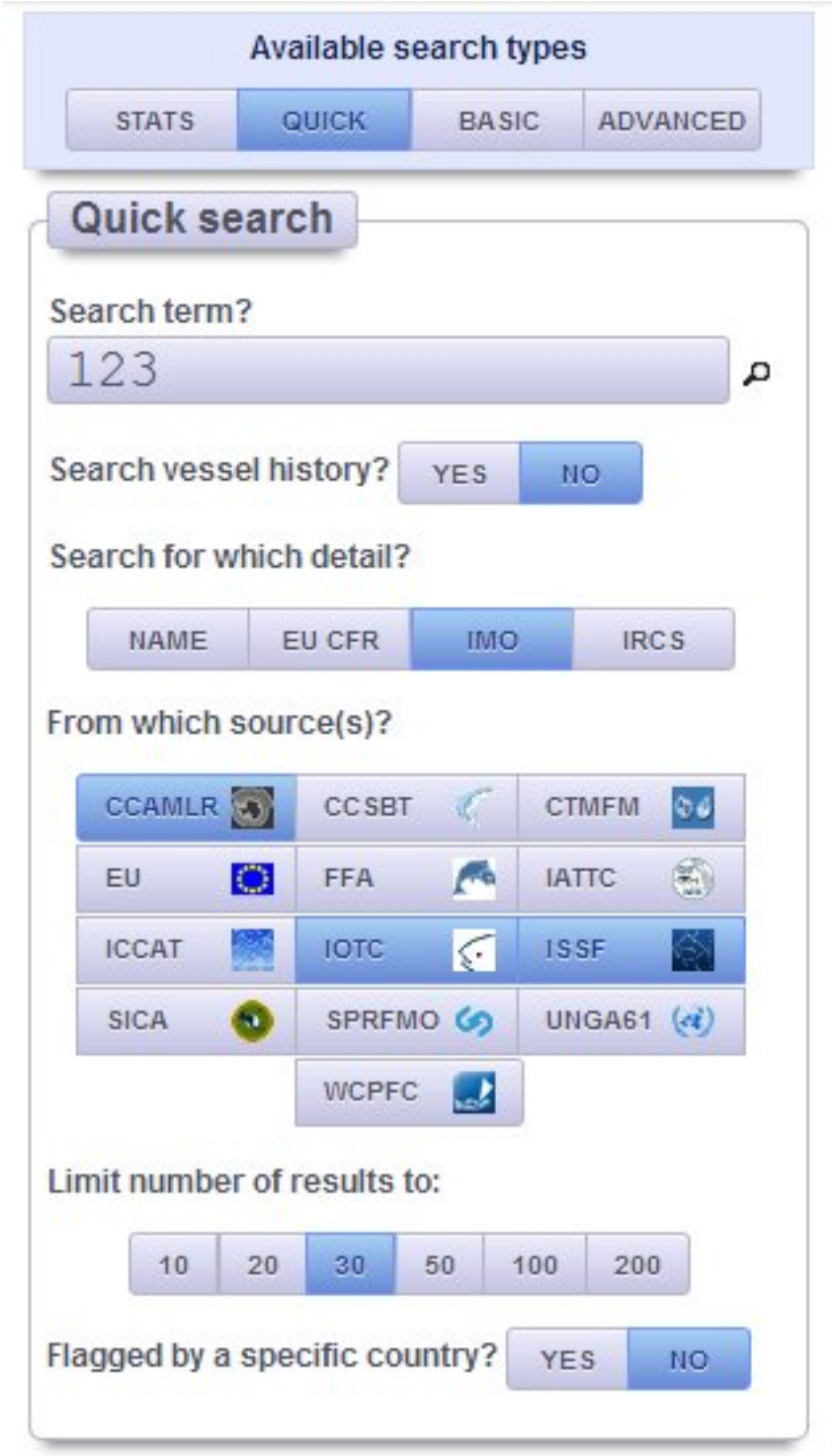
7.2 Quick search

The '*Quick*' search mode (labelled '**QUICK**' in the search type selector: see section 6.3) aims at providing a search-engine alike vessels identification tool. When this search mode is enabled, users may select one of the vessel detail among four available (vessel name, EU CFR, IMO number and IRCS), a subset of the data providers and – possibly – a vessel flag.

Then, typing a text in the search term input field will trigger the search for the provided input according to the selected criteria. According to the vessel detail chosen, results will appear more or less immediately in the corresponding search results panel.

Users have also the option of selecting whether to enable or not the '*historical search*' mode (not enabled by default) and the maximum number of vessels they want to see in the search panel (defaults to 30 entries).

This search mode, just like the '*Statistics driven*' search mode, assumes that the *duplicate vessels grouping mode* is always enabled (indeed, users cannot choose whether to enable it or not).



6. The FVF quick search panel

Picture 6 shows an example of the '*Quick search*' panel, configured to search for vessels reported by CCAMLR, IOTC or ISSF, with an IMO number containing '123', not flagged by a specific country and limiting the results to at most 30 vessels.

The available vessel details among which the search term can be matched against are:

- **Vessel Name** (this triggers a *fuzzy* search, so expect to see vessels containing slightly different variations of the search term appearing in the results)
- **EU CFR** (this triggers an exact search for the input text to appear in a vessel EU CFR)
- **IMO** (this triggers an exact search for the input text to appear in a vessel IMO number)
- **IRCS** (this triggers an exact search for the input text to appear in a vessel IMO number)

Enabling the '*Search vessel history*' option will force the search to look for the provided search term in all of the reported vessels selected detail, regardless of whether the matching entry is the most recent or not. Conversely, when the '*Search vessel history*' option is disabled, identified vessels will match the provided search term only if this is the most recent entry for the selected detail.

Please note that typing text in the '*Search term*' input field will trigger a search as soon as the field content changes (the minimum number of character to insert before triggering a search depends on the selected vessel details), providing live responses to user interaction.

Also, changing any among the historical search flag, the selected vessel detail, the set of data provider, the maximum number of returned results and the set of vessel flags will trigger a new search with the currently inserted search term.

Furthermore, as anticipated in section 6.4, the corresponding search results panel will not allow sorting the returned result set.

Once the search is complete and some vessels are identified with the specified search term and criteria, the search results panel does behave exactly as reported in section 6.4).

7.3 Advanced search

The '*Advanced search*' mode (labelled ***ADVANCED*** in the search type selector: see section 6.3) presents users with the fully-fledged set of filtering criteria currently available.

These are arranged in 'thematic' field sets which we will describe separately in the following sections.

The vessel search criteria do always follow the following rules:

- All distinct criteria (even those in the same thematic field set) are *AND*ed together to form the final search criteria
- Whenever a multiple choice is available (e.g. vessel flags) the selected values for

the specific vessel details will be *OR*ed together in the corresponding final search criteria section

- Whenever a multiple choice is available (e.g. vessel flags) and no value is selected, this is conceptually equivalent to select all the available values for that specific vessel detail

7.3.1 Grouping criteria

7. Grouping criteria

The criteria in this field set allow users to select whether or not the system shall group duplicate vessels and treat them as a single vessel with respect to the other search criteria (what we called the '*duplicate vessels grouping mode*') and whether or not the system shall apply the same grouping scheme to all those codes (vessel types, gear types, registration ports) among which duplicates can be identified.

The two grouping options can be set independently one from another.

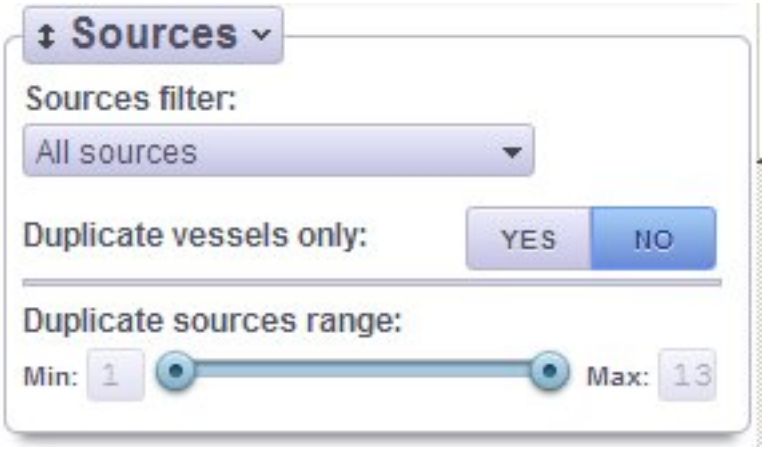
Enabling the '*Group duplicate vessels*' flag will also have effect on the available filtering criteria in the '**Sources**' field set (see section 7.3.2) while enabling the '*Group mapped codes*' flag will have impact in some of the filtering criteria in the '**Basic Criteria**' and '**Registrations**' field sets.

7.3.2 Sources

The criteria in this field set allow users to select a subset of the available data providers as the main search criteria. If other search criteria are set as well, selecting a subset of the available data providers means that the other search criteria must be matched by data reported by the selected data providers only.

The '**Sources**' field set actual content depends on whether users have enabled (or not) the '*Group duplicate vessels*' flag in the '**Grouping**' field set (see section 7.3.1).

If this flag is enabled (as it is by default), the '**Sources**' field set will appear as in picture 8:



8. Sources filtering criteria (vessels grouping enabled)

In such circumstances, users can select a subset of the available data providers via the '*Sources filter*' combo-box. At the same time, they can force the system to extract only vessels that appear as duplicates in two or more sources. Also, regardless of the '*Duplicate vessels only*' flag status, users can restrict the search to vessels appearing as duplicates in a ranged number of sources.

Conversely, if the '*Group duplicate vessels*' flag in the '**Grouping**' field set is disabled, the '**Source**' field set will appear as in picture 9:

9. Sources filtering criteria (vessels grouping disabled)

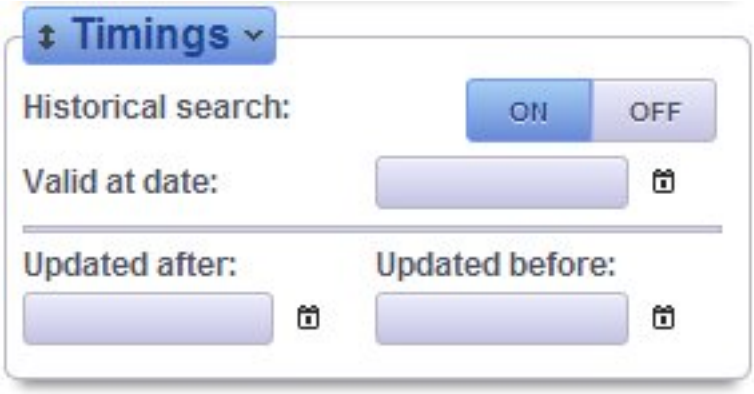
where the filtering criteria related to vessel duplicates are now unavailable.

7.3.3 Timings

The criteria in this field set allow users to select whether the historical search must be enabled (as it is by default) or whether the search must focus on the most recently available details for each vessel.

If the historical search is enabled (as in picture 10) the '*Valid at date*' criteria is also available. The latter allows users to specify a date at which the other search criteria must be valid in order for a vessel to be identified. Its value can be set to any date via a calendar or via direct user input (in the **yyyy/mm/dd** format).

The '*Updated after*' and '*Updated before*' criteria purpose is to filter vessels according to their update date falling in the specified range (that can also be one-sided only, by specifying just one of the two range limits in the same way as the '*Valid at date*' field).



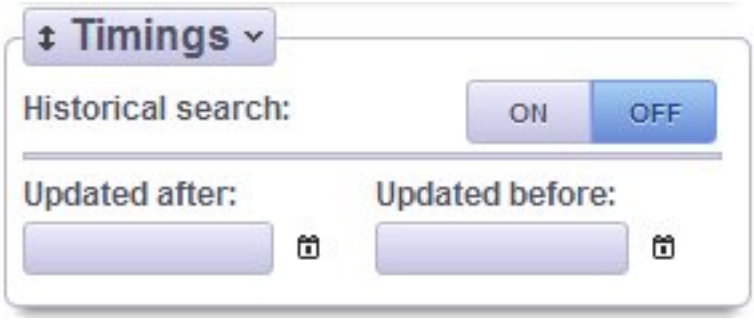
10. Timings filtering criteria (historical search enabled)

Please note that enabling the historical search might produce (apparently) non-consistent results in the search panel if also any of the filtering criteria related to the vessel details actually displayed in the search results panel is set (see section 6.4).

If users search, as an example, for vessels with an historical IRCS set to EABX, they might see vessels appearing in the search results panel with a different call sign (EAHZ). This is due to the fact that the search results panel does always display the most recent details for each vessel attribute, thus if a vessel can be identified as having had (in the past) a call sign matching the user input but its current call sign is different, you will see the latter appearing in the search results panel as part of that specific vessel details.

This same rule applies to all those details (name, flag, gear type etc.) which currently are displayed as part of the vessel details in the search results panel.

If the '*Historical search*' flag is not enabled, the '**Timings**' field set will appear as in picture 11, with the '*Valid at date*' criteria no more available.



11. Timings filtering criteria (historical search disabled)

Selecting one or more data providers in the '**Sources**' field set in combination with the '*Historical search*' flag status will allow users to perform searches such as:

'*find all the vessels with a given attribute set to <value> as the latest valid value for that attribute according to <sources>*' (if the '*Historical search*' flag is disabled)

or

'*find all the vessels with a given attribute set to <value> at least once in its lifetime according to <sources>*' (if the '*Historical search*' flag is enabled).

Also, the combination of one or more selected data providers in the '**Sources**' field set plus the '*Historical search*' flag status will have impact on auto completing fields (vessel name, external marking, IRCS, MMSI etc.) whose proposed values will be filtered by the system according to the selected data providers and historical vs. current search status.

7.3.4 Markings

The criteria in this field set allow users to filter vessels according to their markings (either names or generic external markings).

12. Vessel markings filtering criteria

The '*Name*' filtering criteria can be instructed to perform different types of searches among:

- '*Exact search*' (with fuzzy auto completion of vessel names if the 'Is' option is selected)
- '*Starts with*'
- '*Contains*'

The '*External marking*' filtering criteria does always auto complete on user input for possible values containing the provided text.

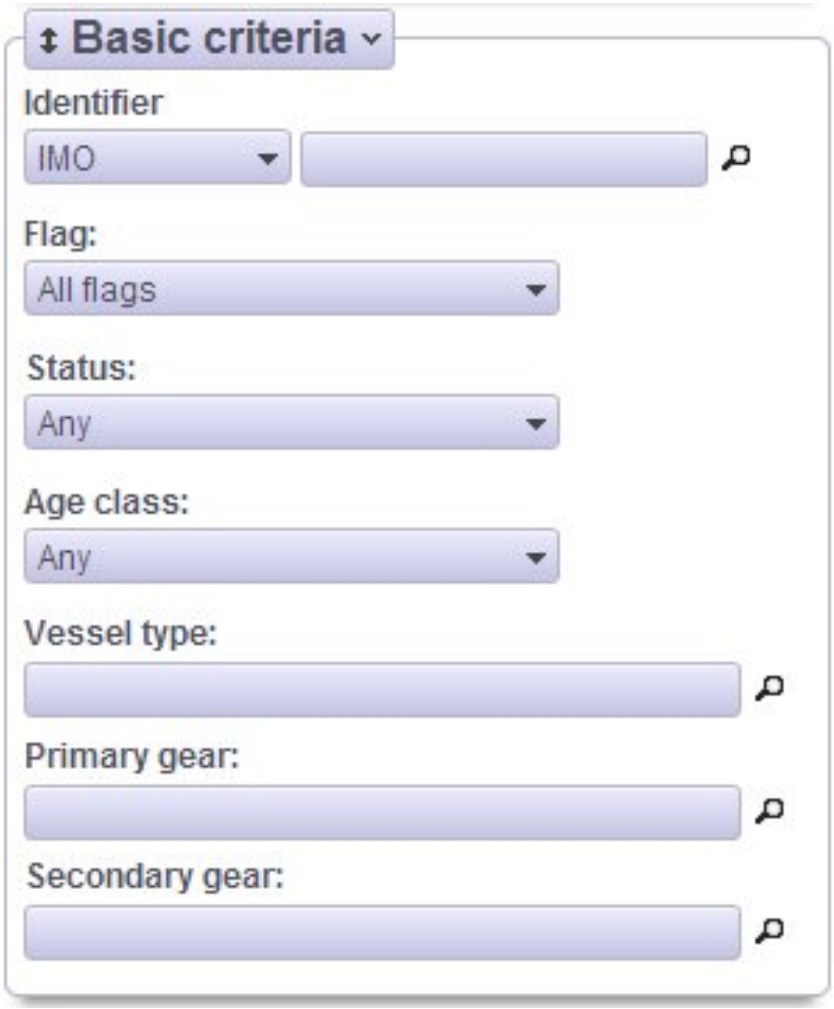
In the cases of name exact search and external marking search, the auto completion results will depend on the grouping mode, selected data providers and timings criteria set in the '**Grouping**', '**Sources**' and '**Timings**' field sets respectively.

Additionally, the vessel name fuzzy auto completion service is smart enough to perform conversions from and to different alphabets than just the Latin one. Currently, it can transliterate from and to Greek and Arabic (the latter with some limitations). Also, it can handle special cases of common patterns (especially related to numbering schemes) in vessel names so as to reduce the probability of not identifying a vessel name because of a slight difference in one of this common patterns.

7.3.5 Basic criteria

The criteria in this field set allow users to filter vessels according to basic vessel details

including vessel identifiers (with auto completion), vessel flag, status, age class, type and gear type (both primary or secondary) as it can be seen in picture 13.



13. Basic filtering criteria

Identifier:

Vessel identifiers can be chosen among:

- VRMF UID (the internal Uniform Identifier for duplicate vessels)
- CLAV TUVI number
- IMO number
- EU fleet registry identifier
- CCSBT number
- IATTC number
- ICCAT number

- IOTC number
- WCPFC number
- FFA number
- CCAMLR identifier

As you might notice, not all of the available data providers do report their own vessel number or identifier (as is the case of SICA / OSPESCA or CTMFM). Conversely, all of the vessels do have a VRMF UID and multiple data providers might report a CLAV TUVI number, an IMO number or an EU fleet registry identifier.

Once users select one of the available identifier type via the combo box under the '*Identifier*' label, the text field to its right will auto complete on user input according to the selected data providers in the '**Sources**' field set (if any).

Flag:

Vessel flags can be set via a multiple-choice combo box. This combo-box do also provide group of flags listing all the countries reported under a distinct geopolitical grouping (e.g. European Union).

Selecting a flag group is equivalent to selecting all the flags under that group. Selecting the same flag under two or more groups (e.g. once under the 'All countries' group and once under the 'European union' group) is logically equivalent to selecting that same flag just once.

Status:

Vessel status can be set via a multiple-choice combo box. This combo-box do also provide group of status listing all the status codes corresponding to a high-level status (e.g. *In service*, *Not in service*, *Permanently not in service*).

Selecting a vessel status group is equivalent to selecting all the vessel status under that group. Selecting the same status under two or more groups (e.g. once under the 'Not in service' group and once under the 'Permanently not in service' group) is logically equivalent to selecting that same status just once.

Please note that among the currently available data providers, only the European Union fleet registry is explicitly reporting information about vessel status.

Age class:

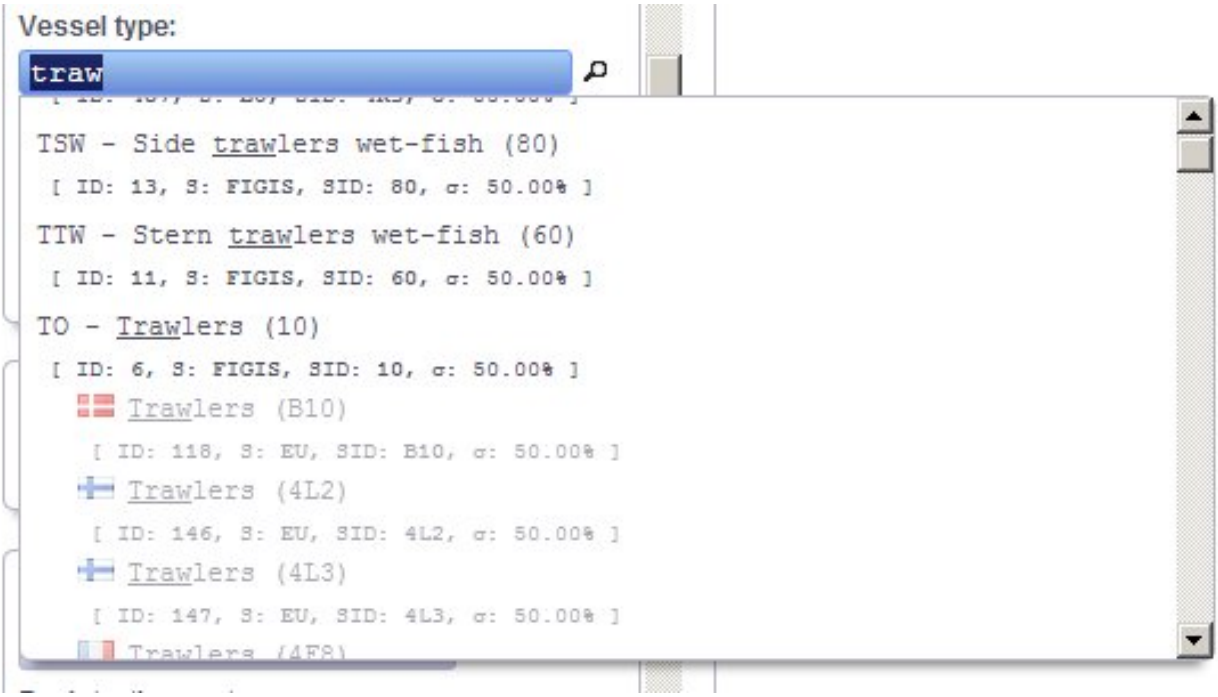
The vessel age class can be set with a single-choice combo-box. Currently, age classes are defined at 5 years interval, with two unbounded classes being 'Less than 5 years old' and more than 115 years old. Age classes do include the left (lower) bound but not the right (upper) bound.

During search, a vessel age is computed as the difference between the current year (at time of search) and each vessel's building year. This means that only vessels with a building year set can be effectively filtered by this criteria.

Vessel type:

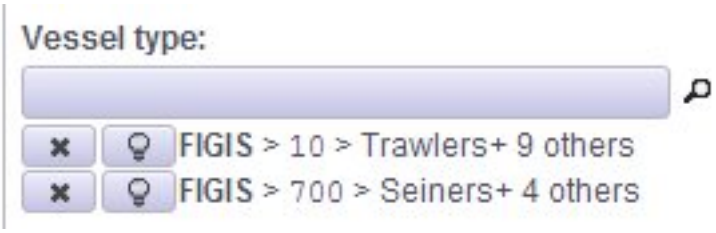
The vessel type criteria can be set by inserting a text in the input field and waiting for the system to (fuzzy) auto complete the input data and provide a list of possible choices. Its behaviour is driven by the data providers selected in the '**Sources**' field set and by the '*Group mapped codes*' flag under the '**Grouping**' field set.

If the latter is enabled, the auto completion on vessel type input will present a hierarchical structure with root entries and mapped (*child*) entries (see picture 14). As input data, users can provide either a vessel type name (e.g. 'Trawlers'), its ISSCFV code (e.g. 'TO') or a source-specific code (e.g. '4C3' for EU German trawlers).



14. Vessel type fuzzy selection (by name)

Once a vessel type is selected, the input field will became blank and the selected entry will appear beneath the input field, allowing users to select other vessel types (see picture 15).



15. Multiple vessel types selection

Once one (or more) vessel types have been selected from the auto completing input field, users can remove the selected entry by clicking on the X-marked buttons on the left of each selected entry or examine the details (including duplicate codes for the entry, when available) by clicking on the light-bulb marked buttons.

The selected vessel type entry is reported with the source coding system in which the

main entry was found, its source-specific code, its description and the number of other vessel type codes that are logically equivalent to the selected entry (*child* entries in the auto completion results).

Picture 15 shows the results of selecting the entry '*Trawler*' (appearing in the corresponding FIGIS code list with ID '10' and logically equivalent to 9 other vessel type codes from – possibly – other code lists) and the entry '*Seiners*' (appearing in the corresponding FIGIS code list with ID '700' and logically equivalent to 4 other vessel type codes from – possibly – other code lists).

This vessel type criteria configuration is equivalent to filtering vessels whose type is one of the 10 possible vessel type codes for '*Trawlers*' OR one of the 5 possible vessel type codes for '*Seiners*' (the same logic as in the multiple-choice combo-boxes applies here, with different values for this criteria being *OR*ed in the final search criteria).

Primary gear:

This criteria behaves exactly in the same way as the '*Vessel type*' criteria, with the obvious difference that the system will auto complete user inputs against the currently listed gear types and filter vessels according to the selected gear types listed as vessels' primary gears.

Secondary gear:

This criteria behaves exactly in the same way as the '*Primary gear*' criteria, with the obvious difference that the system filter vessels according to the selected gear types listed as vessels' secondary gears.

7.3.6 Radio signals

The criteria in this field set allow users to filter vessels according to two distinct kind of vessel radio signals indicators, either IRCS (International Radio Call Sign) or MMSI (Maritime Mobile Service Identity) as it can be seen in picture 16.

16. Radio signals filtering criteria

Both the IRCS and the MMSI input field do auto complete on user input according to:

- selected data providers in the '**Sources**' field set
- the '*Group duplicate vessels*' flag under the '**Grouping**' field set
- the '*Historical search*' flag under the '**Timings**' field set

7.3.7 Registrations

The criteria in this field set allow users to filter vessels according to their registration issuing country, number and port, as it can be seen in picture 17.

17. Vessel registrations filtering criteria

The registration port does auto complete on user input according to:

- selected data providers in the '**Sources**' field set
- the '*Group duplicate vessels*' and '*Group mapped codes*' flags under the '**Grouping**' field set
- the '*Historical search*' flag under the '**Timings**' field set.
- the selected registration countries (if any)

The way in which registration ports can be selected is equivalent to the vessel type and gear types selection (see section 7.3.5).

Registration numbers do auto complete on user input according to the same criteria as the registration port plus the currently selected set of registration ports (if any).

Users can also filter vessels according to one or more registration countries only, one or more registration ports only or registration number only.

7.3.8 Fishing licenses

The criteria in this field set allow users to filter vessels according to their fishing licenses issuing country and number, as it can be seen in picture 18.

18. Fishing licenses filtering criteria

The license number does auto complete on user input according to:

- selected data providers in the '**Sources**' field set
- the '*Group duplicate vessels*' flag under the '**Grouping**' field set
- the '*Historical search*' flag under the '**Timings**' field set
- the selected issuing countries (if any)

Users can also filter vessels according to one or more issuing countries only, regardless of the fishing license number and vice-versa.

7.3.9 Structure

The criteria in this field set allow users to filter vessels according to their structure in terms of physical length or tonnage, as it can be seen in picture 19.

19. Vessel structure filtering criteria

Physical dimensions:

Users can select one of the currently available physical dimensions types from the combo-box under the '***Dimension type***' label.

Once a physical dimension type is selected, the '***Dimension class***' combo-box becomes enabled, allowing users to select one among the available dimension classes defined for that physical dimension type.

These classes are represented as common ranges (in meters): selecting "*Any*" as

dimension class will force the system to filter vessels reporting a physical dimension of that type, regardless of its value.

Tonnages:

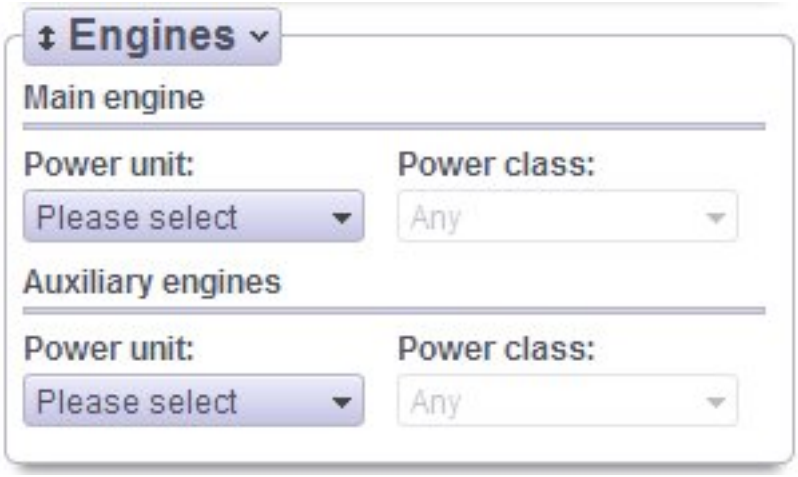
Users can select one of the currently available tonnage types from the combo-box under the '***Tonnage type***' label.

Once a tonnage type is selected, the '***Tonnage class***' combo-box becomes enabled, allowing users to select one among the available tonnage classes defined for that physical dimension type.

These classes are represented as common ranges (in metric tons or cubic meters): selecting "*Any*" as tonnage class will force the system to filter vessels reporting a tonnage of that type, regardless of its value.

7.3.10 Engines

The criteria in this field set allow users to filter vessels according to their engine power (both main engine and auxiliary engines) in terms of unit of measurement and power class, as it can be seen in picture 20.



20. Engine power filtering criteria

Main engine:

Users can select one of the currently available power measurement units from the combo-box under the '***Power unit***' label.

Once a power unit type is selected, the '***Power class***' combo-box becomes enabled, allowing users to select one among the available power classes defined for that power unit type.

These classes are represented as common ranges (in the unit of choice): selecting "*Any*" as power class will force the system to filter vessels reporting a main engine power of that type, regardless of its value.

Please note that no conversion is made between different power units (even if it could be technically possible most of the time). Vessels will be filtered – when a power unit is

selected, together with a power class – if and only if their data providers are reporting their main engine power in that specific power unit and power class range.

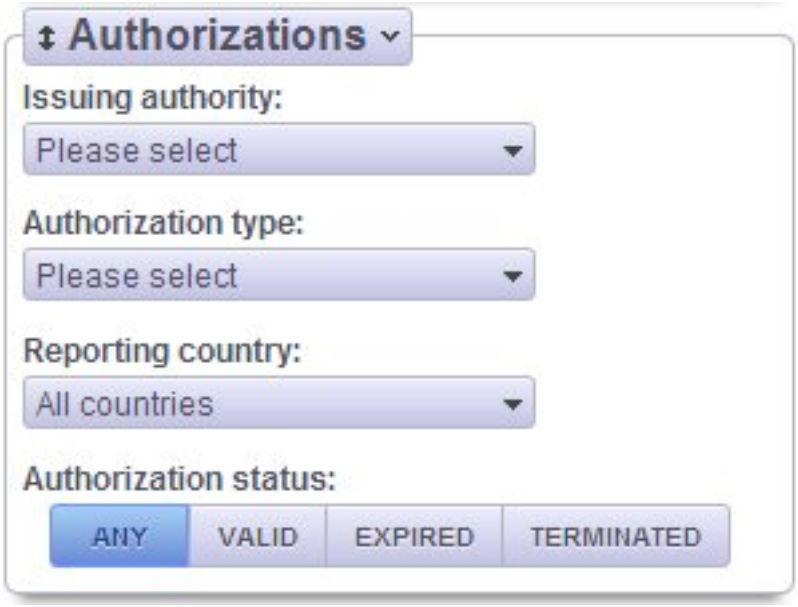
Auxiliary engines:

These filtering criteria do work exactly in the same way as the ***Main engine*** criteria, with the obvious distinction that filtering – when set – will be performed on auxiliary engine power unit and power class range.

7.3.11 Authorizations

The criteria in this field set allow users to filter vessels according to their authorization status and related details. The filtering criteria on vessel authorizations include the issuing authority, the authorization type and reporting country, the authorization status and timings.

In picture 21 you can see an example of authorizations filtering criteria that don't take into account the authorization status.



21. Authorization filtering criteria (no specific status)

Regardless of the authorization status selection, users will always find the following search criteria:

Issuing authority:

A multiple-choice combo-box that allows filtering vessels by authorization issuer (i.e. the organization granting a specific authorization to a vessel). This combo-box do also provide group of authorization issuers listing all the organizations reported under a distinct grouping (e.g. Tuna RFMOs).

Selecting an authorization issuers group is equivalent to selecting all the authorization issuers under that group. Selecting the same authorization issuer under two or more groups (e.g. once under the '*Current systems*' group and once under the '*Tuna RFMOs systems' group*) is logically equivalent to selecting that same issuer just once.

Authorization type:

Once a user selects one or more issuing authorities, the '*Authorization type*' combo-box (which is also a multiple-choice combo-box) will update its content accordingly, providing only the authorization types currently granted by the selected issuing authorities.

Not selecting any issuing authority is equivalent to selecting all of them, so in the default status of the *Advanced search panel*, users will find all the available authorization types listed in this combo-box.

Reporting country:

A multiple-choice combo-box that works exactly as the '*Vessel flag*' combo-box (see section 7.3.5).

Selecting one or more reporting country will limit the search results to vessels having been authorized under the selected countries.

Authorization status:

This flag will limit the search results to vessels whose authorization fulfil the other authorization search criteria and whose status is one of the listed:

- **Any** (the authorization status is not relevant)
- **Valid** (the authorization is currently valid, that is, its time span includes the day in which the search is performed)
- **Expired** (the authorization is currently expired, that is, its time span is expired at the time in which the search is performed but the issuing authority has not reported the authorization as being explicitly terminated)
- **Terminated** (the authorization is currently terminated, that is, regardless of its original time span, it was explicitly terminated by the issuing authority at the time in which the search is performed)

Selecting an authorization status among 'Valid', 'Expired' or 'Terminated' does enable further authorization filtering criteria as seen in picture 22).

22. Authorization filtering criteria (status selected)

When:

This additional filtering criteria appears only when selecting any authorization status but 'Valid'. It allows users to narrow the search by also specifying when the selected authorization status should be valid. Possible options are:

- **Currently** (the selected authorization status must be the last available for filtered vessels)
- **In history** (the selected authorization status must have been valid at least once in the vessel lifetime)
- **At date** (the selected authorization status must have been valid – or should be valid – at a specified date)

Selecting the '**At date**' value for the '*When*' filtering criteria will additionally trigger the availability of another filtering criteria as can be seen in picture 23.

23. Authorization filtering criteria ('status at date' configuration selected)

The additional '**Date**' filtering criteria, allows users to specify a date in time (not necessarily in the past) at which the selected authorization criteria must be fulfilled.

Please note that the various authorization filtering criteria don't need to be set in sequence: users can set a value for any subset of these criteria and the filtering results will change accordingly. For instance, it can be possible to filter vessels authorized by a given authority regardless of the reporting country, or vice-versa.

7.3.12 Display options

This is not a proper filtering criteria but rather drives the way in which results are displayed in the search results panel. It currently allows users to select the number of entries (i.e. vessels) that can be shown in a single result page.

With the current configuration, the default value of 30 entries will completely fill the space available in the results panel. Bigger values will result in a scrollbar appearing at the right of the results panel, while lower values will leave part of this panel empty.

See section 9.1 to learn how to effectively use these option to increase the number of displayed vessels for taller screen resolutions.

7.4 Basic search

The '*Basic search*' mode (labelled ***BASIC*** in the search type selector: see section 6.3) presents users with a subset of the '*Advanced search*' mode and is intended for simpler

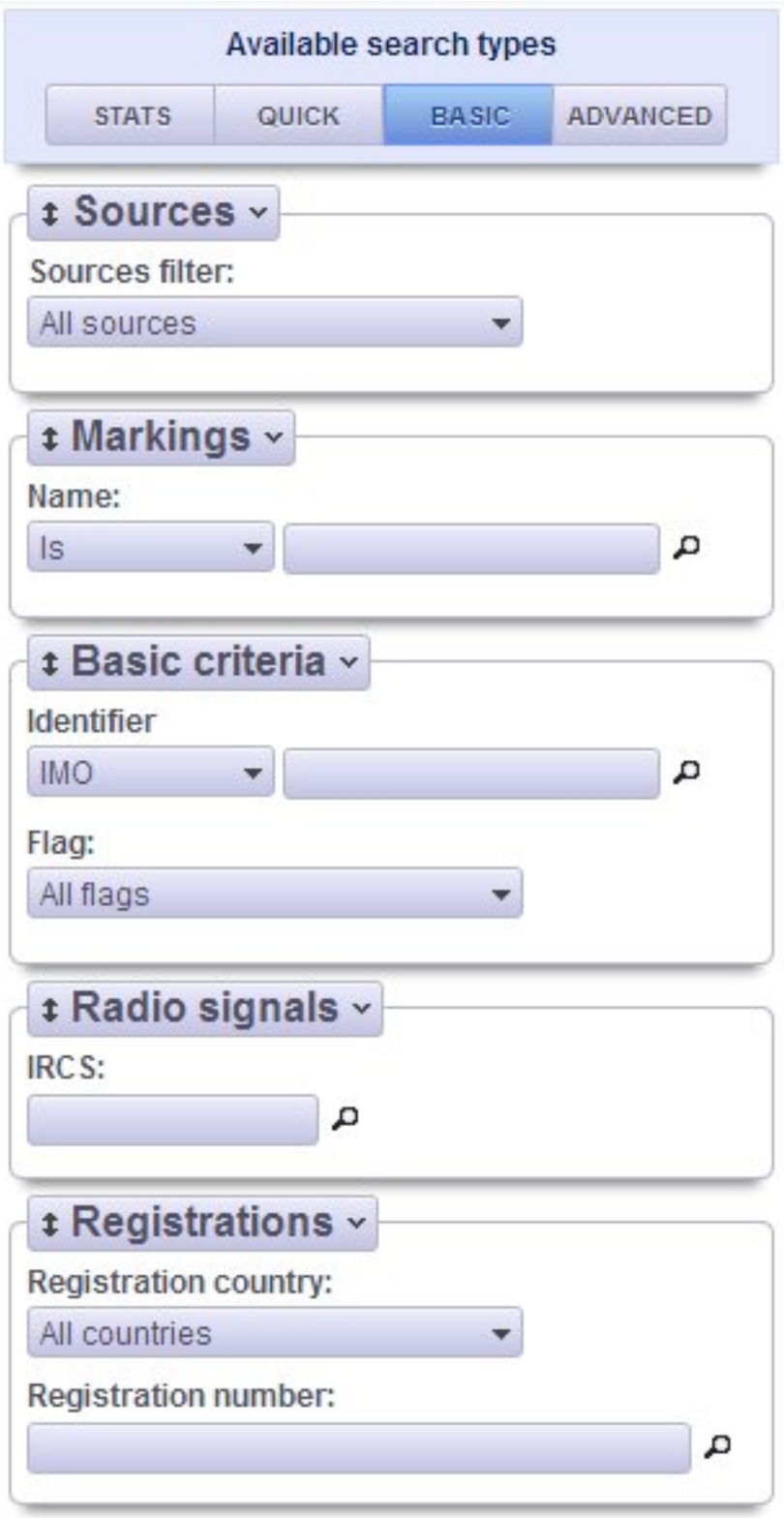
search operations on the most common vessel details.

In particular, this search mode doesn't allow users to select grouping criteria (assuming that search operations will always happen in *duplicate vessels grouping mode*) and timings criteria (assuming that search operations will always happen in *historical search mode*).

The remaining set of available searching criteria can be seen in picture 24.

This search type is particularly useful for quick and simple search operations, as it still provides users the availability of filtering vessels with the most widely known vessel details.

The same concepts reported in section 7.3 do apply, albeit limited to the available search criteria for this search mode.



24. Simple search type filtering criteria

8 Vessel details

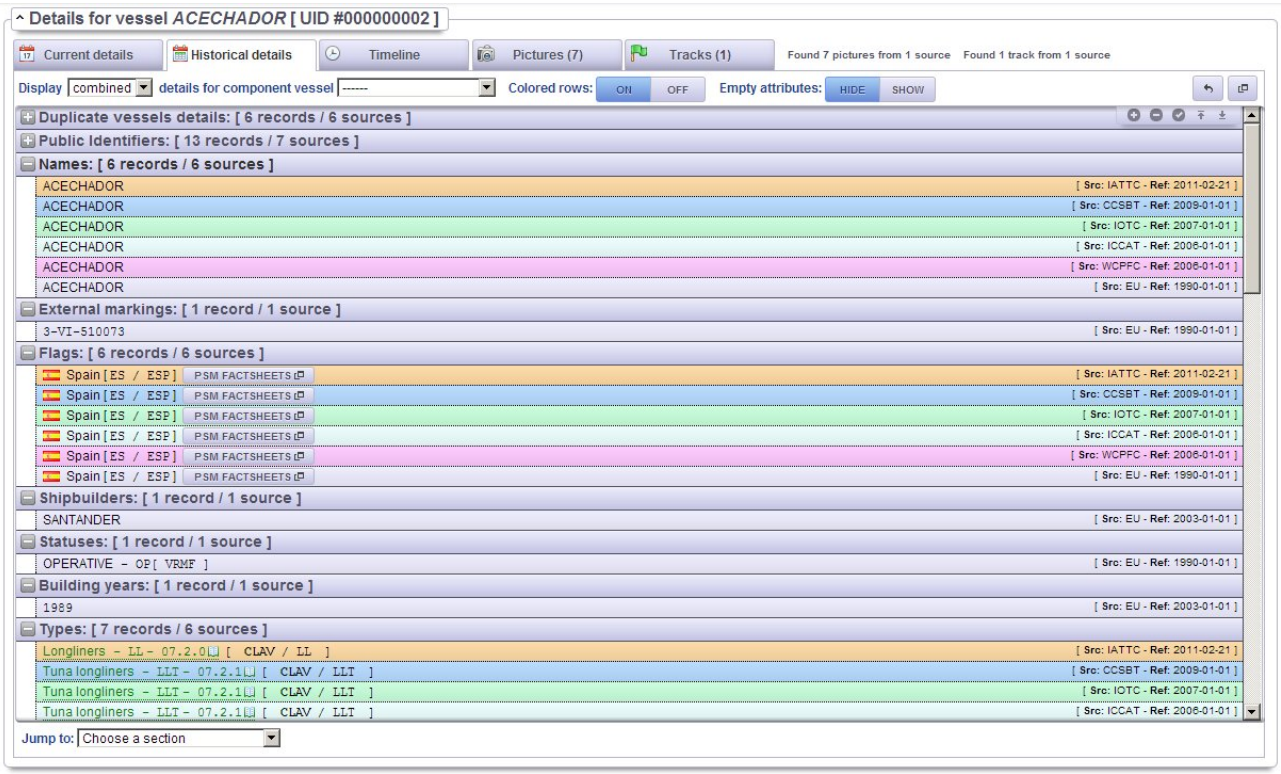
Once users identify a specific vessel of their interest, regardless of the search type of their choice, they can examine its details by clicking on the vessel name in the search results panel.

This will cause switching from the search panel to the vessel details panel, enabling by default the 'Historical details' tab. At the same time, the system will start querying external services provider for additional informations like vessel pictures (see section 8.4) and vessel tracks (see section 8.5) that – not being stored in the FVF database for many a different reason – need to be acquired at vessel details' display time.

The same vessel details can be 'seen' in three different ways:

- Historical (displays ALL the vessel details as they've been accumulated in time from the data providers it appears in)
- Current (displays the most recent vessel details by picking each vessel attribute from the data provider with the 'fresher' information)
- Timeline (displays the vessel details as they've been accumulating in time, using the reference dates rather than the vessel attributes as main entries)

8.1 Historical details



25. Vessel details - historical view

This view mode displays the full set of vessel details accumulated over time by each of the participating vessels reporting sources.

Vessel attributes' data are reported – in descending reference date order – under the specific categories of their pertinence.

These categories are shared by the *Historical* and *Current* view modes and are the following (from top to bottom):

- **Duplicate vessel details:** the details about participating vessels, including the time at which and the reason for having merged multiple vessel in a single, uniform vessel with the given UID. Each participating vessel is reported with the corresponding link to access its specific (i.e. not grouped with other participant vessels) details as stored in the FVF database.
- **Public identifiers**: all the identifiers that are publicly known for the vessel such as its IMO number, its EU CFR, the original source identifier for any of its participating vessels and so on. Each public identifier might be accompanied by a menu that allows linking external sources to find additional data linked to that specific identifier. The number of external sources varies according with the identifier type, with the IMO having currently the larger number of external linked sources available.

  Also, the link to each participating vessel as reported by its original data source is shown whenever available.
- **Names**: the list of names collected for each participating vessel, both in their original form (as provided by the corresponding source) and in their 'normalized' form (in square brackets, whenever it differs from the original form)
- **External markings:** the list of external markings collected for each participating vessel
- **Flags:** the list of flags collected for each participating vessel. If the FAO / FIGIS web pages do list port state measures for the vessel flag country, these can be displayed and searched for additional details about what measures a vessel should stand
- **Shipbuilders:** the list of shipbuilders collected for each participating vessel. It might happen that some vessels have multiple, distinct shipbuilders reported. This is a consequence either of the original data source having corrected shipbuilder data over time or of different sources providing different shipbuilders details for a given vessel
- **Statuses:** the list of vessel status collected for each participating vessel
- **Building years:** the list of building years collected for each participating vessel. It might happen that some vessels have multiple, distinct building years reported. This is a consequence either of the original data source having corrected building years data over time or of different sources providing different building years details for a given vessel
- **Vessel types:** the list of vessel types collected for each participating vessel. These are decorated with details about the corresponding coding system (as reported by each participating vessel data provider) as well as links to external data sources

detailing a specific vessel type (as is the case of vessel types with ISSCFV code that might have a dedicated fact sheet available in the FAO / FIGIS web pages)

- **Gear types:** the list of gear types collected for each participating vessel, split between *primary* and *secondary gear types*. These are decorated with details about the corresponding coding system (as reported by each participating vessel data provider) as well as links to external data sources detailing a specific gear type (as is the case of gear types with ISSCFG code that might have a dedicated fact sheet available in the FAO / FIGIS web pages)
- **Call signs:** the list of International Radio Call Signs collected for each participating vessel. These are decorated with the country the call sign was reported to belong to, as well as links to external data sources (e.g. the ITU website) that can help collect additional vessel details by being queried via that specific IRCS value
- **MMSIs:** the list of MMSIs collected for each participating vessel. These are decorated with links to external data sources (e.g. the ITU website) that can help collect additional vessel details by being queried via that specific MMSI value
- **Registrations:** the list of vessel registration details collected for each participating vessel. These are decorated with the country the vessel is registered to, as well as the registration port data (when available) and the registration number. Additionally, registration ports might be visualized on a world map if the FVF has information about their coordinates and the registration number might be linked to external data sources (e.g. the NOAA website) to collect additional information, if available. Also, if the FAO / FIGIS web pages do list port state measures for the registration country, these can be displayed and searched for additional details about what measures a vessel should stand
- **Fishing licenses:** the list of vessel fishing licenses details collected for each participating vessel. These are decorated with the country the fishing license is related to, as well as the fishing license number
- **Physical dimensions:** the list of physical dimensions details (including type, value and measurement unit – generally meters) collected for each participating vessel
- **Tonnages:** the list of tonnage details (including type, value and measurement unit – generally metric tons) collected for each participating vessel
- **Engines:** the list of vessel engine details (split between main engine and auxiliary engines) including power unit type and value, collected for each participating vessel
- **Crew:** the list of crew sizes collected for each participating vessel
- **Owners:** the list of owner details collected for each participating vessel. If the owner details report a country and address, the latter can be shown on a world map according to an external reverse geocoding service
- **Operators:** the list of operator details collected for each participating vessel. If the operator details report a country and address, the latter can be shown on a world map according to an external reverse geocoding service

- **Authorizations:** the list of authorizations the vessel has been granted by each issuing authority it is reported by. These are flagged with a coloured pictogram to easily detect the authorization status and are decorated with the reporting country, issuing authority, authorization type and time frame, termination date, termination reason, authorized area (with links to FAO / FIGIS factsheets for the corresponding FAO major areas), gear and species (with links to FAO / FIGIS factsheets for the authorized gear and species, when available)

Also, the distinct vessel details views do all share the same colouring scheme for rows (i.e. vessel details reported by a specific source) so as to improve the identification of the different data providers that are reporting each of the displayed vessel attributes. Furthermore, each attribute is decorated at its right with details about the corresponding data provider ID and reference date (that is, the time at which that attribute was reported as being current for that participating vessel by its specific data provider).

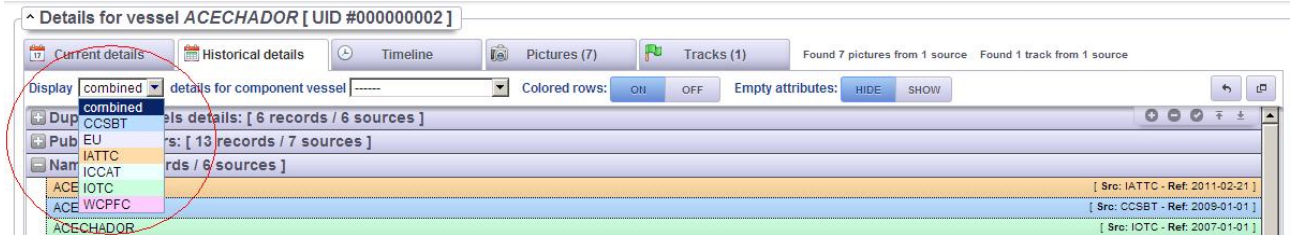
Row colouring can be turned on and off by using the '*Colored rows*' controls placed on top of the vessel details (outside the scrollable area, see picture 26).

26. Coloured rows control

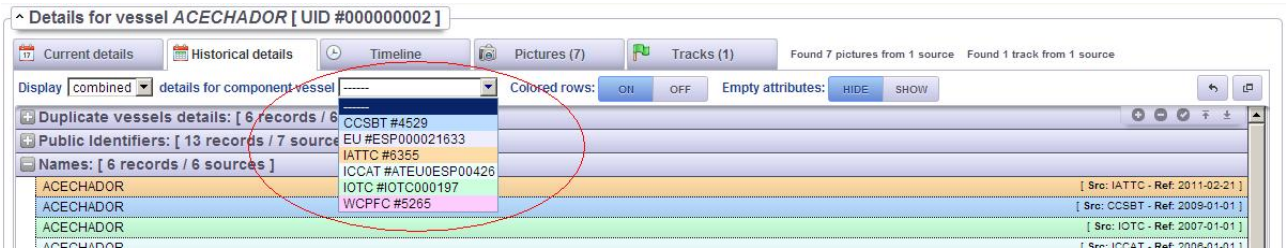
Also, attributes which don't have any value for a given vessel (and which are not displayed by default) can be turned on and off by using the '*Empty attributes*' controls placed next to the '*Colored rows*' controls (this is true for the *Historical* and *Current* vessel details views, see picture 27)

27. Hidden attributes controls

Grouped vessels details can also be analysed by restricting the display to those details provided by a specific data provider or a specific participating vessels only. This is achieved – in all of the three distinct vessel details views – by using the combo-boxes in the top-left part of vessel details (outside the scrollable area, see picture 28 and 29)



28. Vessel sources selection controls

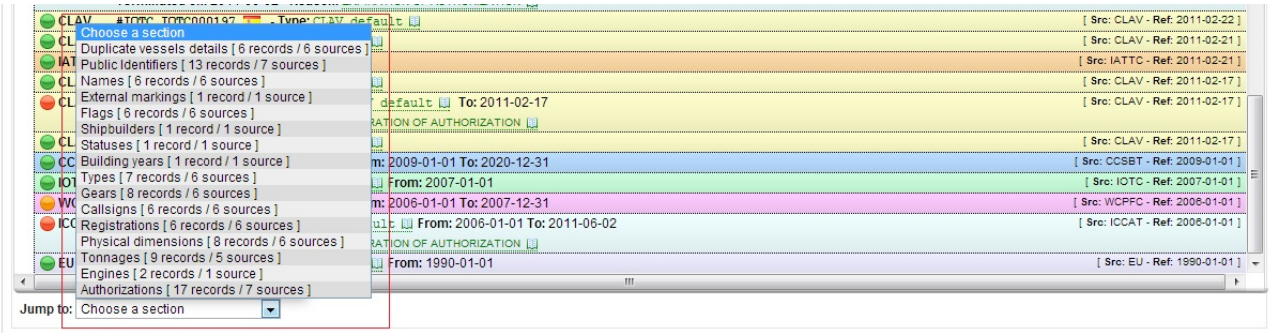


29. Participating vessels selection controls

Please note that the *participating vessel selection control* is updated according to choices made on the *vessel source selection control*.

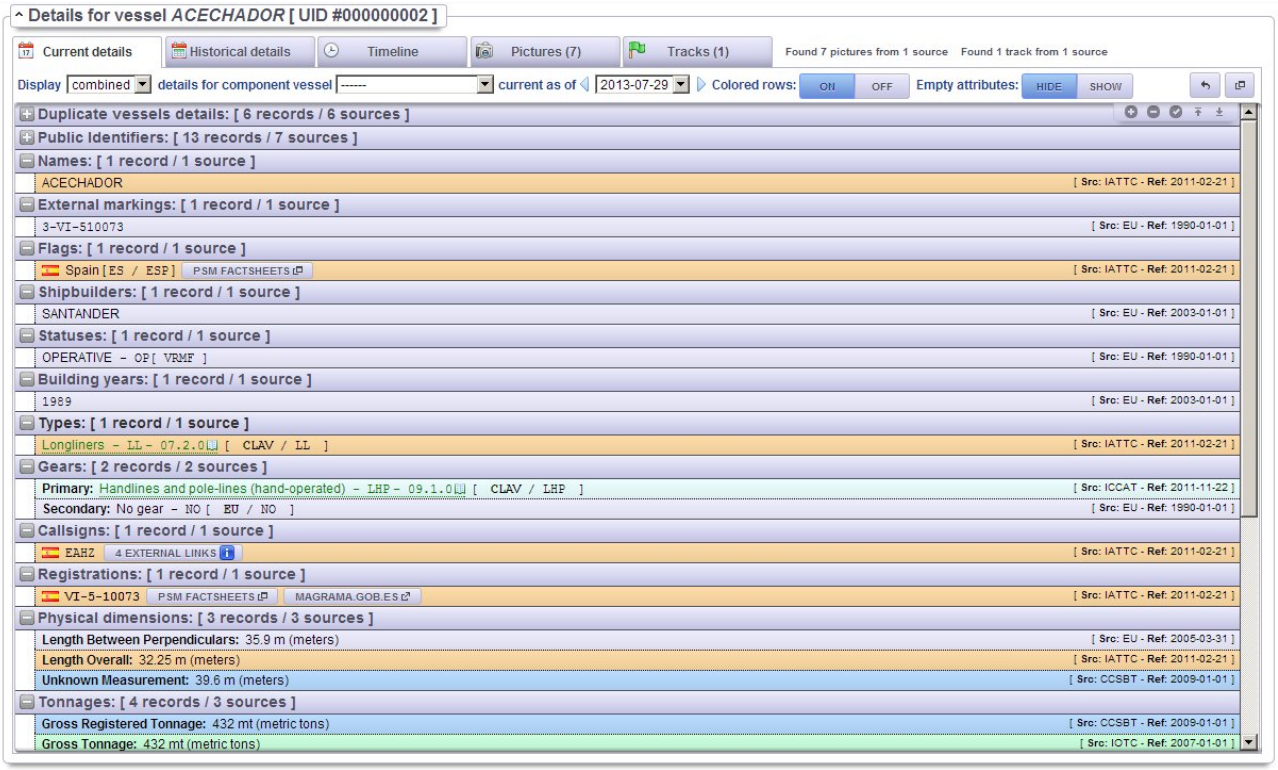
Basically, these two controls are equivalent (there generally is one participating vessel per each distinct source) but in a few cases (some IOTC vessels, for instance) two or more distinct vessels from the same source might have been found as duplicates and thus appear as participating vessels with the same UID (but different original ID, in the *participating vessels selection control*).

An additional control available for the '*Historical*' view mode is shown in picture 30. It basically allows scrolling to (and highlighting) one of the available vessel attributes and is particularly useful for vessels having a long history. It is available at the bottom of the vessel details panel, just outside its scrollable area.



30. Historical vessel details section control

8.2 Current details



31. Vessel details - current view

The '*Current*' view mode displays a snapshot of the vessel details at a given date (current date, by default).

Attribute by attribute, the displayed information are exactly the same as the '*Historical*' view mode, with the exception that only the most recent (according to their reference date) information for each attribute are actually shown.

A slightly different rule applies to '*typed*' attributes (physical dimensions, tonnages) whereas the most recent values are displayed for *each type* valid for that attribute (e.g. most recent LOA, most recent LBP, most recent GT etc.).

This same rule also applies to *split* attributes as gear types (split between *primary* and *secondary*) and engine powers (split between *main engine* and *auxiliary engines*).

Furthermore, the *'Current'* view mode does also list two additional attributes not available in the '*Historical*' view mode: *previous name* and *previous flag*.

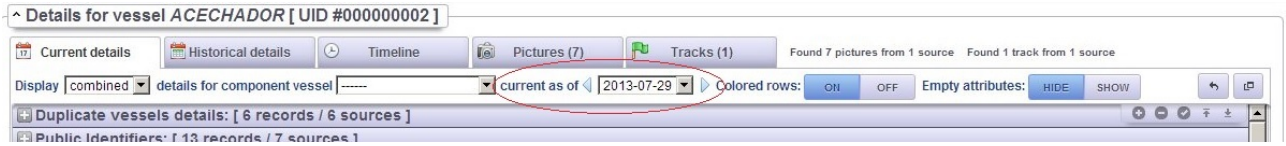
These two attributes are commonly used in reports produced by many a data provider and they're actually set at the first non-equal (not necessarily the previous) corresponding attribute value for that vessel.

If a vessel is flagged (in descending reference date order) as: **France**, France, **Spain**, Italy, the vessel current flag will be **France** while the vessel previous flag would be **Spain**.

This view mode also allows users to navigate back and forth in time to see how that

specific vessel *looked like* at a given date (among those available as reference dates for its attributes).

Changing the '*current*' date for the displayed vessel can be accomplished by means of the combo-box highlighted in picture 32 or with the scrolling arrows at its sides. Dates available in the combo-box are only those reference dates at which some of the attributes for the vessel historical data is set.



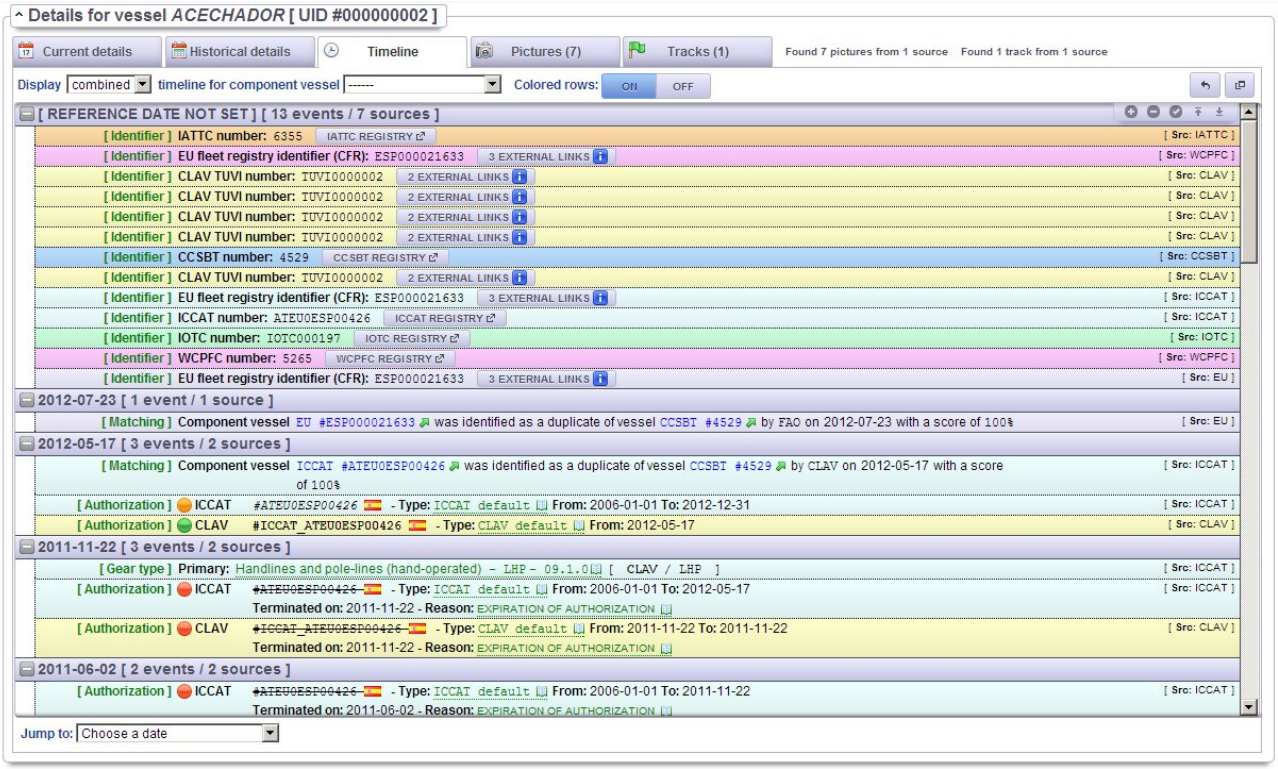
32. Time navigation controls

8.3 Timeline

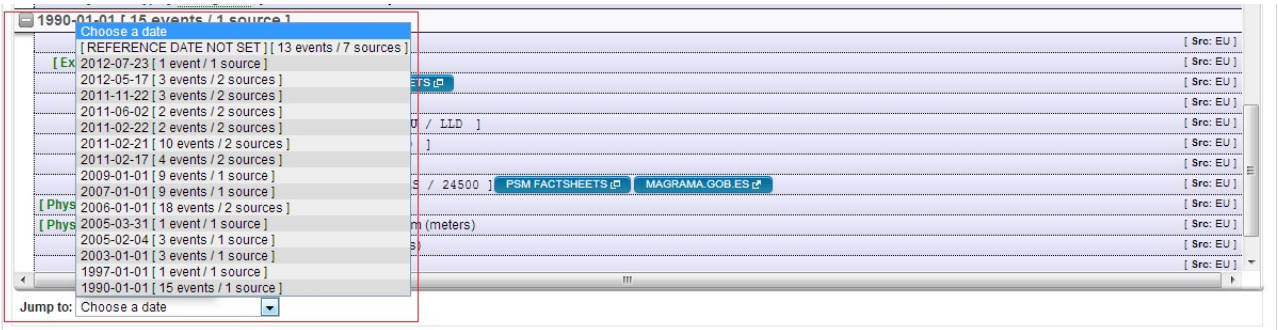
The '*Timeline*' view mode is yet another way of looking at vessel details: these are now arranged by reference date instead of attribute type and each available date sub-panel is filled with all the attributes set for the vessel at that date.

It allows users to control the data source and / or participating vessel whose data must be displayed, exactly as already seen for the '*Historical*' and '*Current*' view mode plus, it allows users to scroll to (and select) a specific date in the vessel timeline by means of the controls shown in picture 34 (at the bottom of the vessel timeline view, just outside the scrollable area).

Beside this, displayed attributes have the same content as in the '*Current*' and '*Historical*' view, and are decorated – at their left – with the corresponding attribute label.



33. Vessel details - timeline view



34. Timeline vessel details section control

8.4 Vessel pictures

As of today, many dedicated services (or collaborative platform) do exist that have the purpose of collecting and allow searching for vessel pictures and tracks.

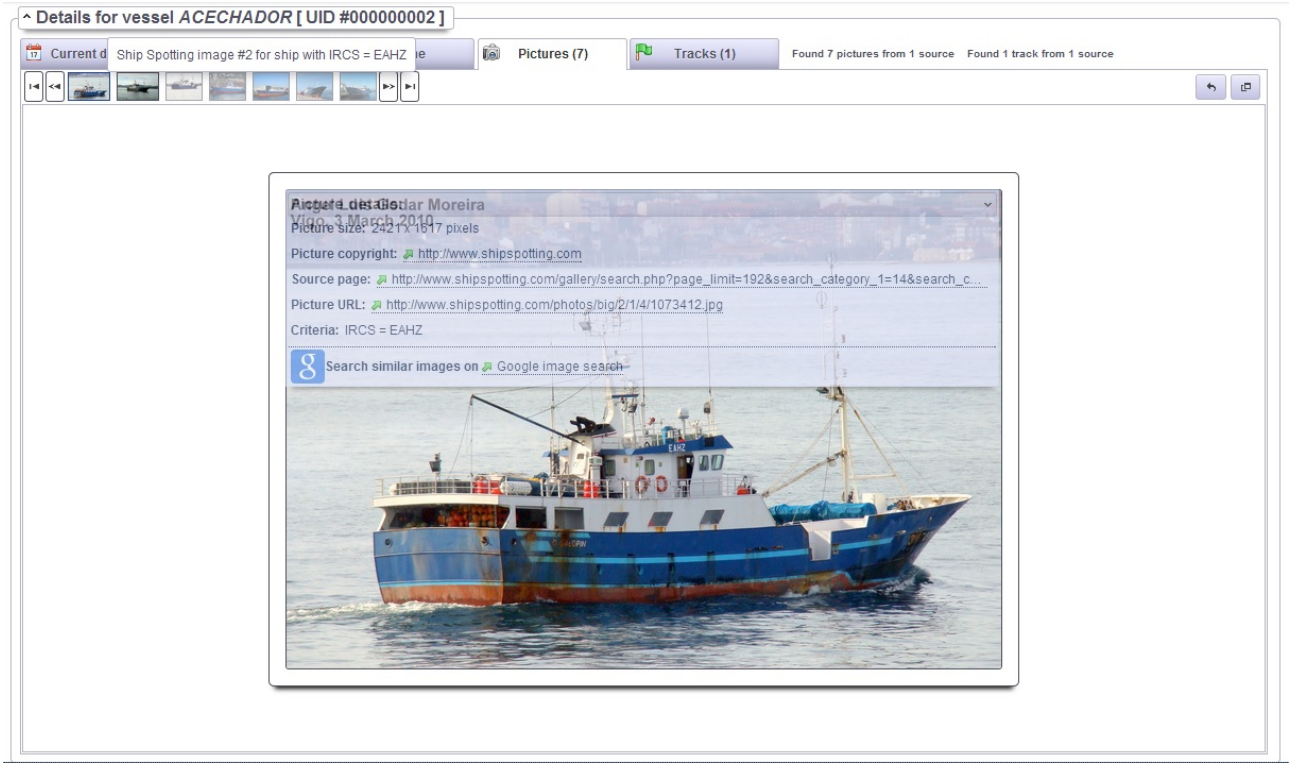
The FVF is capable of linking a specific vessel to many of these services so as to attempt to find additional data (mainly images and vessel tracks) to support users into better identifying the vessel they're searching for.

As already said, these information are not stored in the FVF database but are retrieved at vessel details display time (and this might require a few seconds to complete).

Picture identification, according to the current set of dedicated external services that the FVF can leverage, is performed via the following vessel attributes:

- IMO number
- EU CFR
- Data provider vessel ID (for WCPFC and IATTC vessels)
- IRCS
- MMSI
- Registration number
- Name

If the FVF can find pictures for the currently displayed vessel based on one (or more) of its attribute in the previous set (current as well as historical values), these are retrieved and presented to the user with all the related information that allowed their identification plus references to the source service that provides (and hosts) that same pictures.

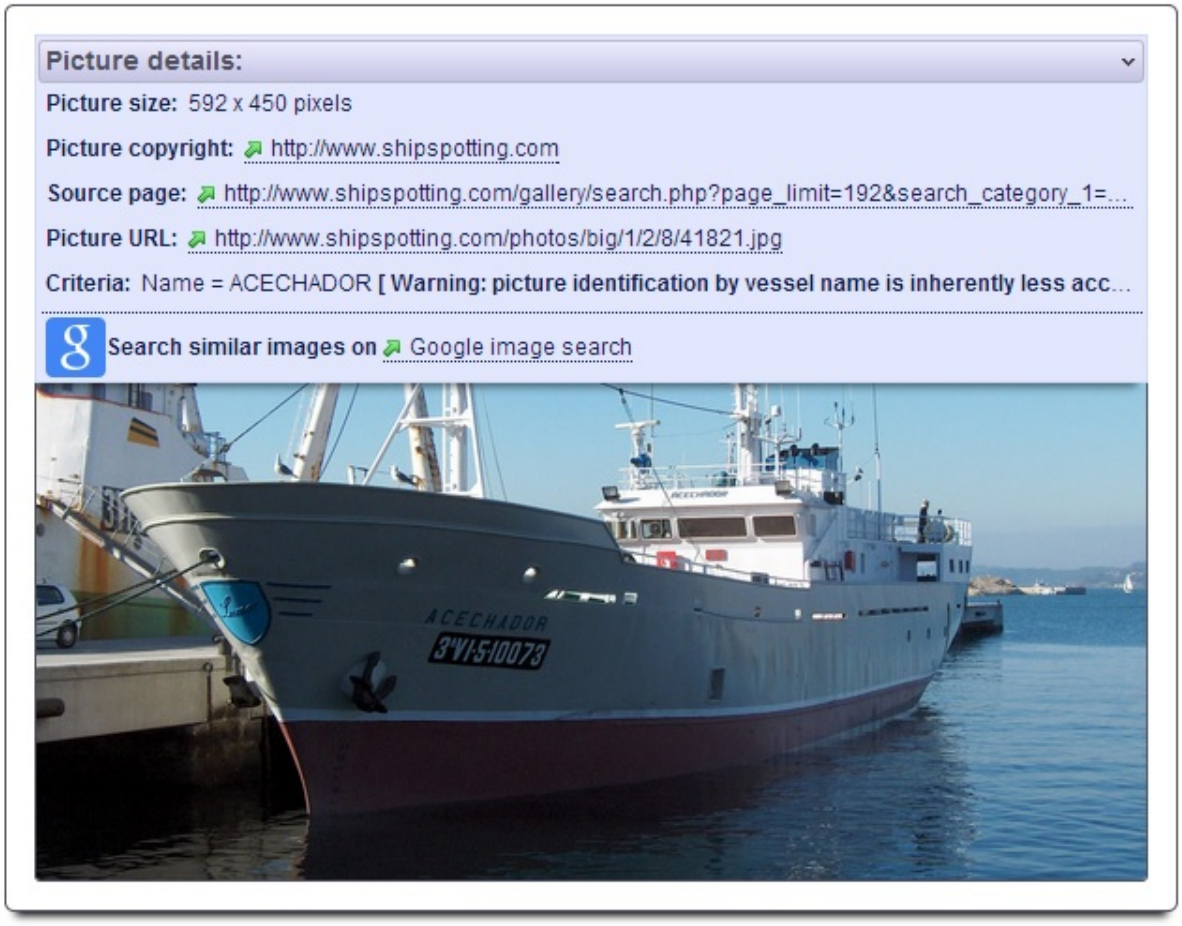


35. Vessel pictures display

The topmost part of the panel in picture 35 displays the available pictures thumbnails and allows scrolling to its start and end as well as moving to previous and next picture (see control buttons at its sides). Hovering on each thumbnail will display basic details about how (and by which service) that picture was identified (see picture 36 for a magnified view).

36. Basic picture details

Superimposed on each vessel picture is a panel with the data about picture size, provider, location, URL and identification criteria (see picture 37)



37. Vessel picture detail

The displayed information are as follow:

- **Picture size:** original picture dimension (W x H) in pixels
- **Picture copyright / courtesy of**: the link to the picture provider
- **Source page:** URL of the page containing references to this picture

- **Picture URL:** the actual image URL
- **Criteria:** the criteria (based on current vessel details and picture provider API) that allowed the identification of the displayed picture. Generally speaking, identification of vessel pictures by IMO number, EU CFR, original data provider identifier and – to a lesser extent – IRCS and MMSI is quite accurate. The same is not necessarily valid for pictures identified by vessel names (as the picture providers may have pictures of many homonym vessels or the provided vessel name string might be included in a different vessel name, e.g. *Maria* can lead to identify pictures also for vessels named *Santa Maria* or *Marianna*). For this reason, whenever a vessel picture is identified by vessel name, a proper warning is displayed to let user be aware of this eventuality.

An additional external link allows users to search, via the Google image search service, for images similar to the currently displayed one. This service, although not 100% accurate, can provide useful links to pages embedding that same image and – possibly – providing further details about the depicted vessel.

The superimposed *'Picture details*' panel is initially semi-transparent (to allow users see through its content how the picture looks like). It becomes opaque when the mouse pointer is over it and can be collapsed (by double clicking on its header or clicking on the control at its right) and dragged (by clicking and holding onto its header) to improve picture visualization.

Vessel pictures provider are listed in the '*Credits*' page (the link is in the page footer).

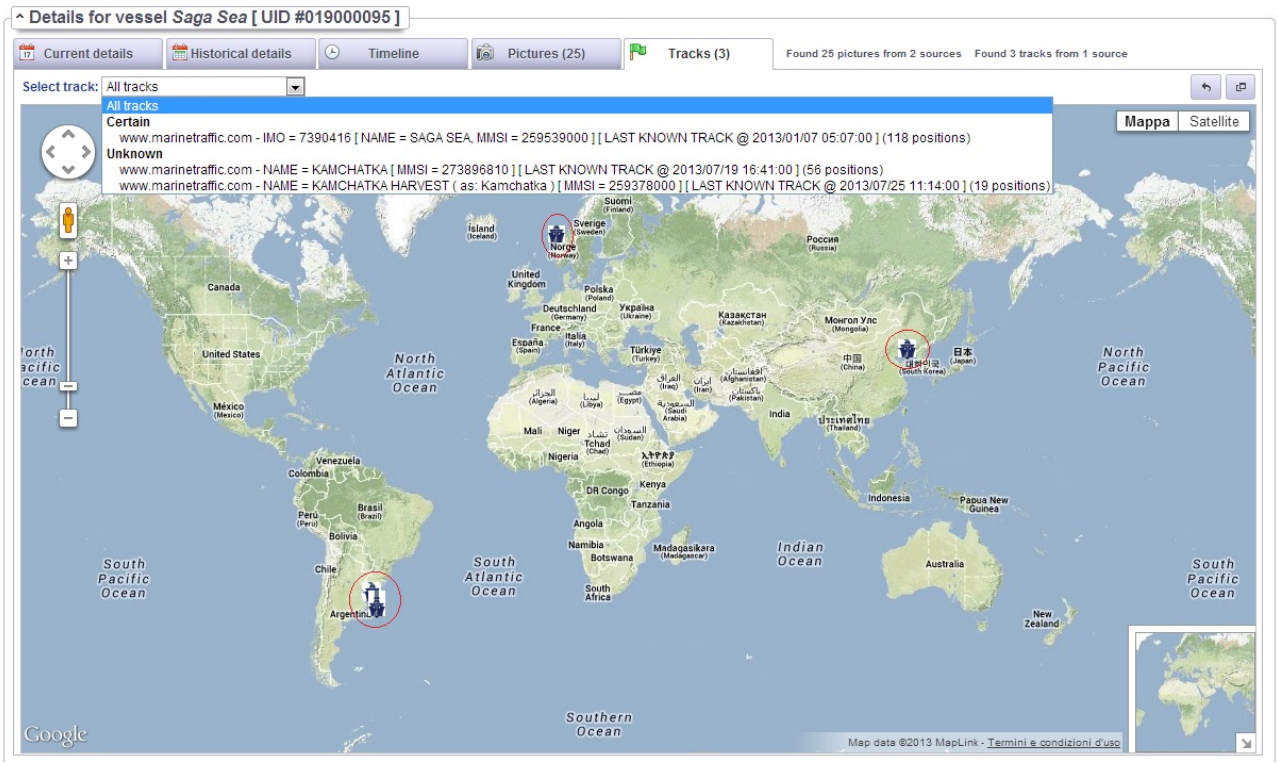
8.5 Vessel tracks

The same preconditions and concepts as for vessel pictures do apply to vessel tracks as well. External services are queried (at vessel details display time) according to a subset of the vessel attributes and, if track information are available as reported by these services, they're displayed over a world map with details about the tracks data provider as well as the identification criteria and some other details.

In particular, vessel tracks provider do sometime report also additional vessel details that can be helpful to determine whether the returned data do really apply to the vessel being currently displayed. This helps users into evaluating whether the proposed track is really related to the vessel of their interest.

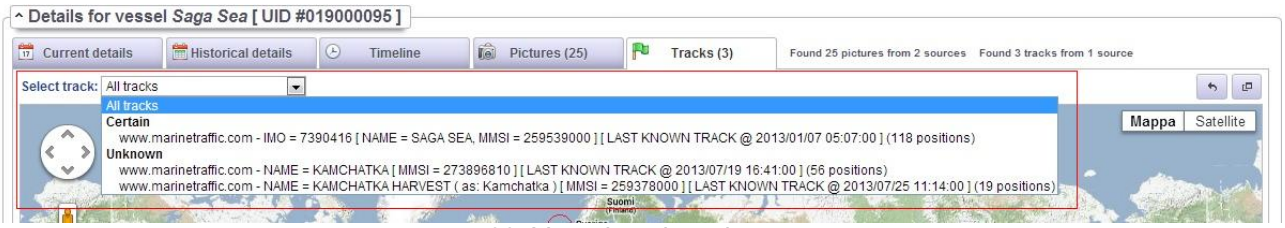
With the help of these additional details, tracks can be categorized in:

- **Certain** (the track is identified by IMO number, when available)
- **Unknown** (based on the additional details retrieved from the tracks provider, the system cannot tell whether this track does refer or not to the selected vessel if not for the criteria that lead to track identification)
- **Unlikely** (some of the additional details retrieved from the tracks provider do clash with current vessel details: the track probably refers to some other vessel that shares parts of its details with the current vessel)



38. Vessel tracks display

Once one or more tracks are retrieved from the external vessel tracks providers, the system displays ship positions (using each track provider own icon) on a world map and populates a combo-box (see picture 39) with details about each retrieved track.



39. Vessel tracks selector

In the vessel tracks selector image above, we can see that the system has retrieved three tracks details from the same provider (www.marinetraffic.com) and has categorized these three tracks the following way:

- One track as **certain** as this was retrieved via vessel IMO (7390416 in the example) and yield as additional details the name '*Saga sea*' and the MMSI 259539000. As you can see, the retrieved name is the same as the current vessel name, so this gives additional support to the confirmation of this track as being correct for that vessel.
- Two tracks as **unknown**. They were retrieved via vessel (previous) name (*Kamchatka*, in this example) and yield two distinct result: one for a vessel named

Kamchatka (exact match with one of the current vessel's previous names) and one for a vessel named *Kamchatka harvest* (partial match with one of the current vessel's previous names). In both cases, the additional details retrieved by the tracks provider (two different MMSIs) cannot be confirmed by the current vessel details, as this is not listing any MMSI among its collected attributes.

Among the details reported in the track selector combo-box entries users can find:

- The tracks provider URL
- The identification criteria
- The additional details retrieved from the tracks provider (in square brackets)
- The details about when that track was reported as current by the tracks provider (in square brackets)
- The number of positions that track is made of (in brackets)

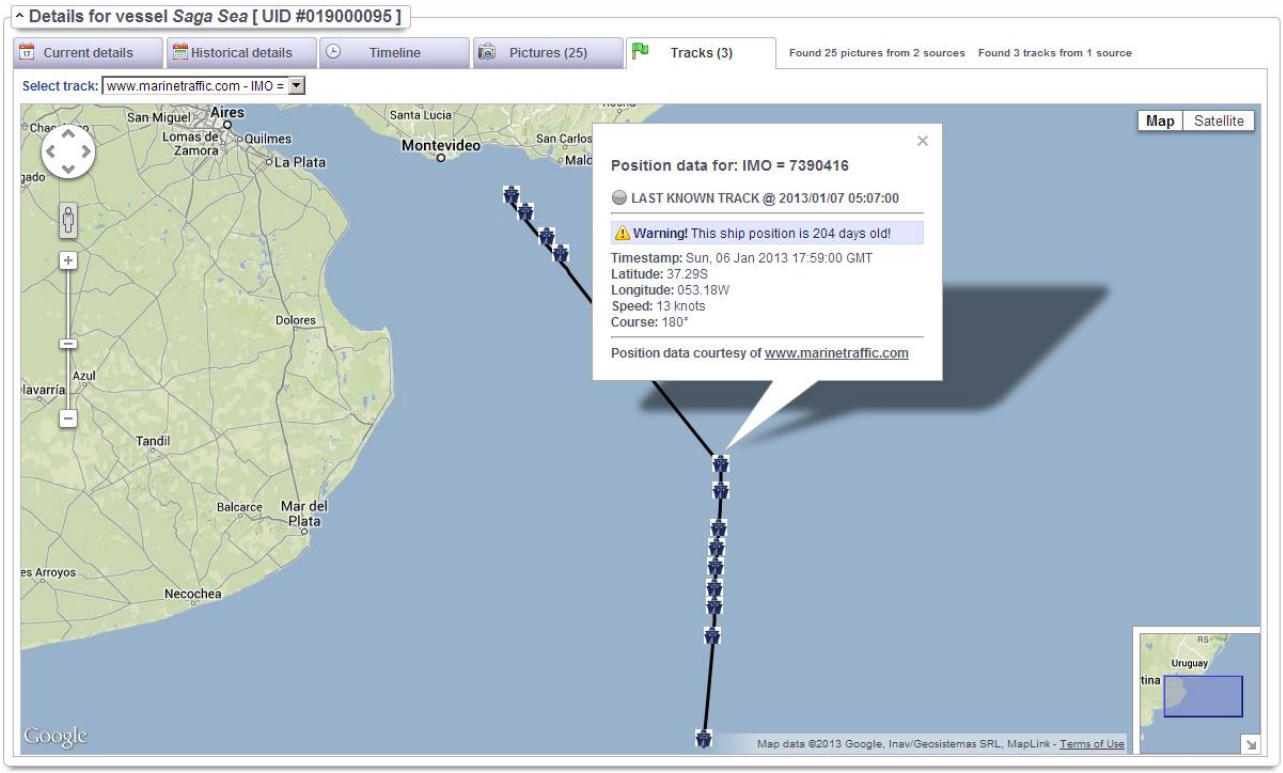
Some vessel track providers are capable of providing *real* tracks (sequence of coordinates at different timestamps), some others are just providing the current position (one single pair of coordinates at a given timestamp).

Selecting one entry from the track selector control (see picture 39) will centre and zoom the map on the selected track, using the smallest boundary box that encompasses all the points it is made of.

Additionally, moving the mouse pointer over one of the points in the track will open a pop-up displaying details about what criteria led to the identification of that track and what that specific point characteristics are, including:

- Timestamp at which that track position was collected
- Latitude and longitude of that track position
- Vessel speed at that track position
- Vessel course at that track position
- Link to the track position provider

The system can also warn users in case the displayed position is particularly old, as it can be seen in picture 40, where the position data are reported as being 204 days old).



40. Track position details

In picture 41, you can see an example of a track provider (www.shipspotting.com) returning very detailed information for a vessel track.

The example shows a vessel track (actually made of just one position) retrieved by IRCS *DEAN2,* that is 'decorated' with additional informations retrieved by the track provider including IMO, MMSI and name for the vessel the track belongs to.

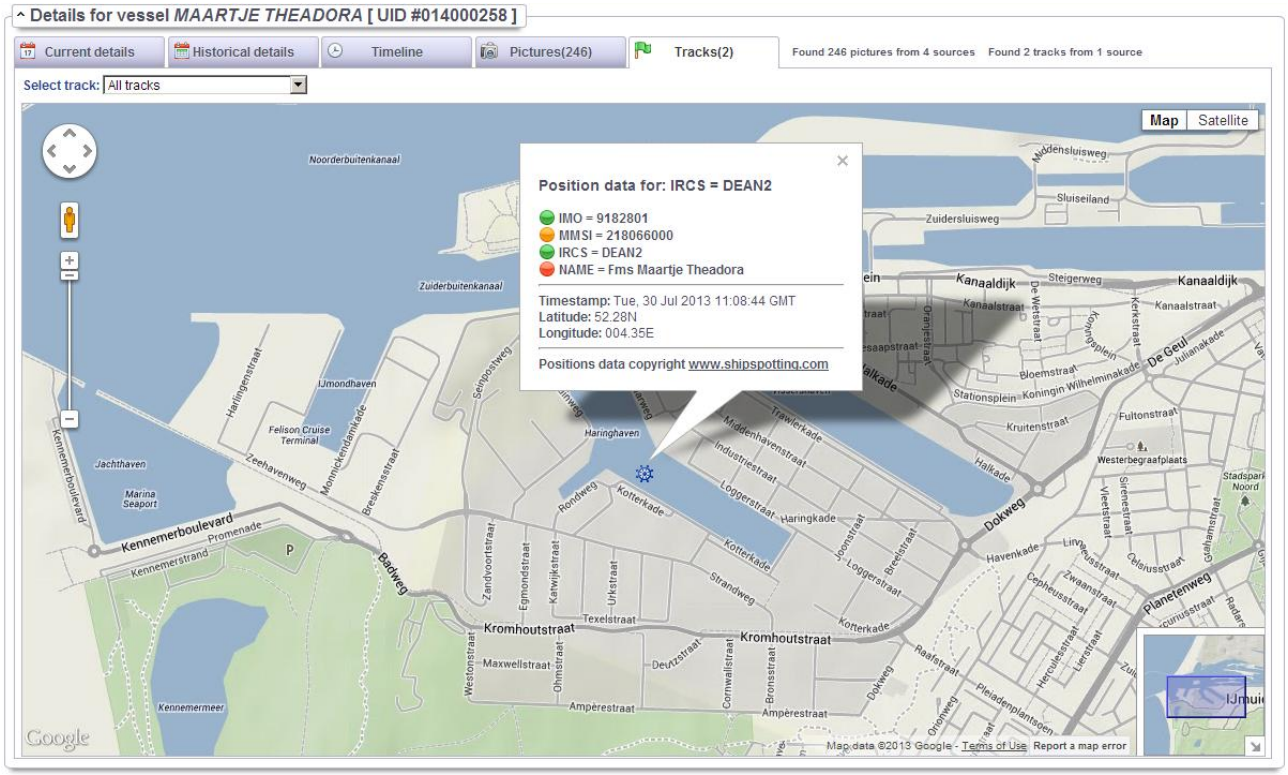
The original vessel that led to this' track identification had the following characteristics (with respect to these additional informations):

- **IMO:** *9182801* (exactly the same value returned by the track provider, hence it is marked with a green pictogram)
- **IRCS:** *DEAN2* (exactly the same value returned by the track provider, hence it is marked with a green pictogram)
- **Name:** *Maartje Theadora* (differs from the value returned by the track provider, that is *Fms Maartje Theadora*, hence it is marked with a red pictogram)
- **MMSI:** *none available*

Furthermore, among the additional vessel details, we can also find an MMSI (218066000) that cannot be compared with the corresponding attribute for the current vessel (as this doesn't list any MMSI) and hence is marked with an orange pictogram.

In this situation, even though the track has been retrieved with the help of a *weak* attribute (as the IRCS) we can assume that it refers to the current vessel as the IRCS (obviously)

and the IMO number are exactly the same as returned by the track provider and as available in the FVF vessel details.



41. Full track position details

The map displaying the vessel positions can be zoomed in and out and switched from the '*Map*' view to the '*Satellite*' view (the latter often providing higher levels of zooming). It is an external component implemented via the Google Maps API.

Just like vessel pictures, vessel tracks provider are listed in the '*Credits*' page (the link is in the page footer).

8.6 Common vessel details controls

When displaying vessel details, users have a couple of controls at their availability to perform some common operations.

The '*Historical*', '*Current*' and '*Timeline*' view do show a toolbox in the top-right corner of their scrollable area (see the red outlined box in picture 42).

This toolbox provides controls to expand, collapse and toggle all nodes (attribute containers for the first two viewing modes or date container for the last viewing mode) as well as scroll to the top or bottom of the vessel details panel.

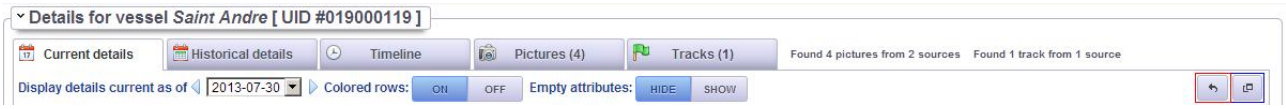
42. Vessel details toolbox

Each attribute or date container can also be manually toggled open (or closed) by clicking on the container label (attribute names, when in '*Historical'* or '*Current'* view, dates when in '*Timeline'* view). Beside this, each container label always report the number of records (entries sharing the same container, be it an attribute or a date) and the number of data sources providing details for that record.

Additionally, all the five vessel details sections (including vessel pictures and tracks) do provide an additional control (see the blue outlined box in picture 42) at its top left corner (just before the vessel name and UID label) to expand or collapse the detail content panel (removing scrollbars when in 'expanded' mode).

Also, the five vessel details sections (when accessed from the search result panel) do always present two additional controls that allow users to 'detach' the current vessel details in a separate (new) browser window, thus giving the opportunity of comparing two vessels of interest side by side) and return back to the search panel to select a new vessel or perform a new search.

These are shown in picture 43as the blue outlined box and red outlined box respectively.



43. Additional controls

Please note that when detaching the vessel details in a separate window, you cannot return back (from that new window) to the original search result panel that lead to that vessel's identification nor you can detach the vessel details once again.

9 Advanced usage tips

9.1 Layout tweaking

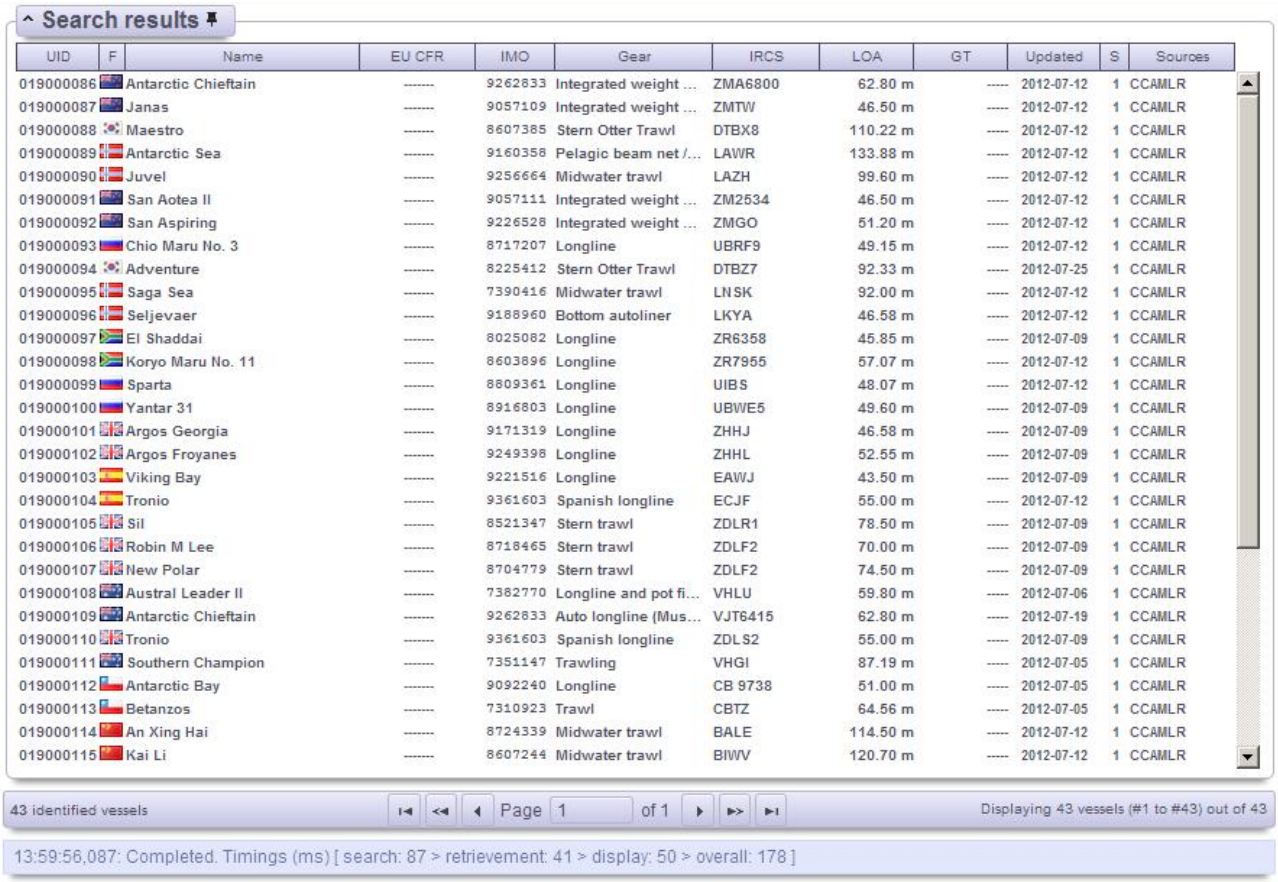
The FVF web pages are designed assuming that clients have a minimum screen resolution of 1280 x 1024 pixels.

For this reason, they do generally fit in browser windows (under that screen resolution) without the need to scroll the pages up or down.

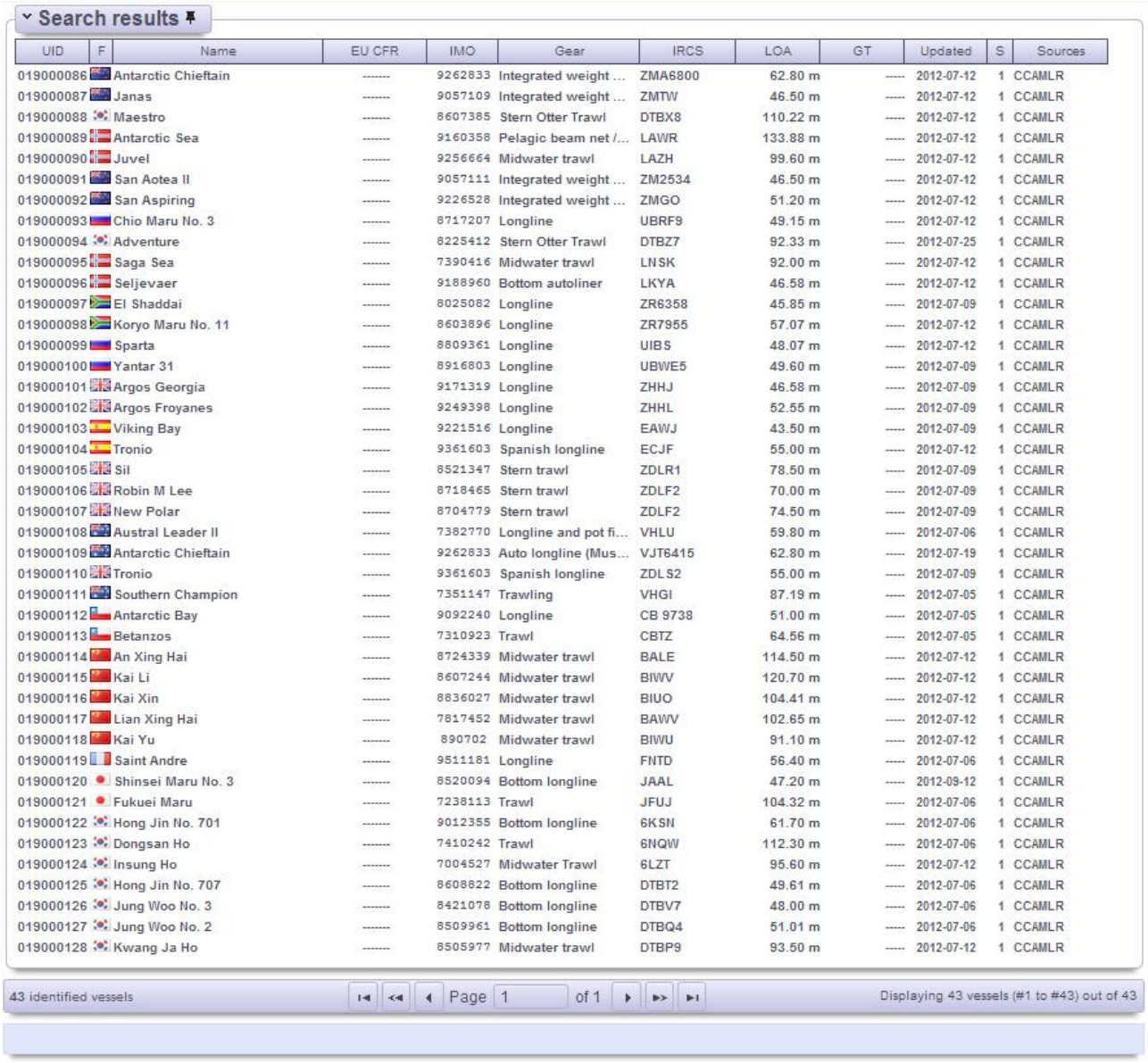
If a client has a taller screen resolution and users want to display as much vessels as possible in the search results panel, beside increasing the number of returned results via the (see section 7.3.12) they can also use the panel height toggler (see picture 44) to expand to full height (or collapse to a default height) this panel.

44. Search results panel height toggler

An example of a collapsed search results panel (displaying more available results than the default 30 entries albeit with an active scrollbar) is in picture 45, while in picture 46 you'll see an example of that same set of available results with the search results panel expanded to full height (no scrollbar).



45. Collapsed search results panel

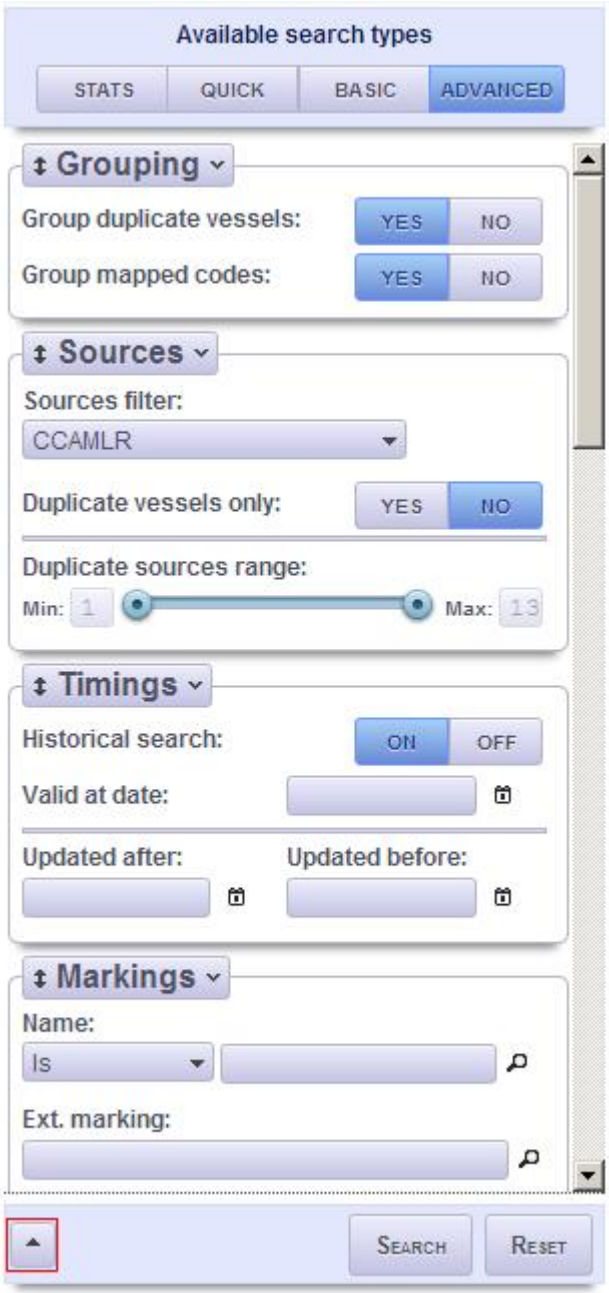


UID	F	Name	EU CFR	IMO	Gear	IRCS	LOA	GT	Updated	S	Sources
019000086		Antarctic Chieftain	-------	9262833	Integrated weight ...	ZMA6800	62.80 m	-----	2012-07-12	1	CCAMLR
019000087		Janas	-------	9057109	Integrated weight ...	ZMTW	46.50 m	-----	2012-07-12	1	CCAMLR
019000088		Maestro	-------	8607385	Stern Otter Trawl	DTBX8	110.22 m	-----	2012-07-12	1	CCAMLR
019000089		Antarctic Sea	-------	9160358	Pelagic beam net /...	LAWR	133.88 m	-----	2012-07-12	1	CCAMLR
019000090		Juvel	-------	9256664	Midwater trawl	LAZH	99.60 m	-----	2012-07-12	1	CCAMLR
019000091		San Aotea II	-------	9057111	Integrated weight ...	ZM2534	46.50 m	-----	2012-07-12	1	CCAMLR
019000092		San Aspiring	-------	9226528	Integrated weight ...	ZMGO	51.20 m	-----	2012-07-12	1	CCAMLR
019000093		Chio Maru No. 3	-------	8717207	Longline	UBRF9	49.15 m	-----	2012-07-12	1	CCAMLR
019000094		Adventure	-------	8225412	Stern Otter Trawl	DTBZ7	92.33 m	-----	2012-07-25	1	CCAMLR
019000095		Saga Sea	-------	7390416	Midwater trawl	LNSK	92.00 m	-----	2012-07-12	1	CCAMLR
019000096		Seljevaer	-------	9188960	Bottom autoliner	LKYA	46.58 m	-----	2012-07-12	1	CCAMLR
019000097		El Shaddai	-------	8025082	Longline	ZR6358	45.85 m	-----	2012-07-09	1	CCAMLR
019000098		Koryo Maru No. 11	-------	8603896	Longline	ZR7955	57.07 m	-----	2012-07-12	1	CCAMLR
019000099		Sparta	-------	8809361	Longline	UIBS	48.07 m	-----	2012-07-12	1	CCAMLR
019000100		Yantar 31	-------	8916803	Longline	UBWE5	49.60 m	-----	2012-07-09	1	CCAMLR
019000101		Argos Georgia	-------	9171319	Longline	ZHHJ	46.58 m	-----	2012-07-09	1	CCAMLR
019000102		Argos Froyanes	-------	9249398	Longline	ZHHL	52.55 m	-----	2012-07-09	1	CCAMLR
019000103		Viking Bay	-------	9221516	Longline	EAWJ	43.50 m	-----	2012-07-09	1	CCAMLR
019000104		Tronio	-------	9361603	Spanish longline	ECJF	55.00 m	-----	2012-07-12	1	CCAMLR
019000105		Sil	-------	8521347	Stern trawl	ZDLR1	78.50 m	-----	2012-07-09	1	CCAMLR
019000106		Robin M Lee	-------	8718465	Stern trawl	ZDLF2	70.00 m	-----	2012-07-09	1	CCAMLR
019000107		New Polar	-------	8704779	Stern trawl	ZDLF2	74.50 m	-----	2012-07-09	1	CCAMLR
019000108		Austral Leader II	-------	7382770	Longline and pot fi...	VHLU	59.80 m	-----	2012-07-06	1	CCAMLR
019000109		Antarctic Chieftain	-------	9262833	Auto longline (Mus...	VJT6415	62.80 m	-----	2012-07-19	1	CCAMLR
019000110		Tronio	-------	9361603	Spanish longline	ZDLS2	55.00 m	-----	2012-07-09	1	CCAMLR
019000111		Southern Champion	-------	7351147	Trawling	VHGI	87.19 m	-----	2012-07-05	1	CCAMLR
019000112		Antarctic Bay	-------	9092240	Longline	CB 9738	51.00 m	-----	2012-07-05	1	CCAMLR
019000113		Betanzos	-------	7310923	Trawl	CBTZ	64.56 m	-----	2012-07-05	1	CCAMLR
019000114		An Xing Hai	-------	8724339	Midwater trawl	BALE	114.50 m	-----	2012-07-12	1	CCAMLR
019000115		Kai Li	-------	8607244	Midwater trawl	BIWV	120.70 m	-----	2012-07-12	1	CCAMLR
019000116		Kai Xin	-------	8836027	Midwater trawl	BIUO	104.41 m	-----	2012-07-12	1	CCAMLR
019000117		Lian Xing Hai	-------	7817452	Midwater trawl	BAWV	102.65 m	-----	2012-07-12	1	CCAMLR
019000118		Kai Yu	-------	890702	Midwater trawl	BIWU	91.10 m	-----	2012-07-12	1	CCAMLR
019000119		Saint Andre	-------	9511181	Longline	FNTD	56.40 m	-----	2012-07-06	1	CCAMLR
019000120		Shinsei Maru No. 3	-------	8520094	Bottom longline	JAAL	47.20 m	-----	2012-09-12	1	CCAMLR
019000121		Fukuei Maru	-------	7238113	Trawl	JFUJ	104.32 m	-----	2012-07-06	1	CCAMLR
019000122		Hong Jin No. 701	-------	9012355	Bottom longline	6KSN	61.70 m	-----	2012-07-06	1	CCAMLR
019000123		Dongsan Ho	-------	7410242	Trawl	6NQW	112.30 m	-----	2012-07-06	1	CCAMLR
019000124		Insung Ho	-------	7004527	Midwater Trawl	6LZT	95.60 m	-----	2012-07-12	1	CCAMLR
019000125		Hong Jin No. 707	-------	8608822	Bottom longline	DTBT2	49.61 m	-----	2012-07-06	1	CCAMLR
019000126		Jung Woo No. 3	-------	8421078	Bottom longline	DTBV7	48.00 m	-----	2012-07-06	1	CCAMLR
019000127		Jung Woo No. 2	-------	8509961	Bottom longline	DTBQ4	51.01 m	-----	2012-07-06	1	CCAMLR
019000128		Kwang Ja Ho	-------	8505977	Midwater trawl	DTBP9	93.50 m	-----	2012-07-12	1	CCAMLR

46. Expanded search results panel

When in '*Advanced*' search mode, the great number of available filtering criteria necessarily requires a scrollbar to navigate among all the possible options (while staying in the above mentioned screen resolution constraints).

The '*Advanced*' search mode filtering criteria panel can be expanded or collapsed as well by using the dedicated control placed at its bottom (on the left of the 'Search' and 'Reset' buttons, see the red-outlined box in picture 47).



47. Search filter controls (advanced search mode)

By clicking on the search filter height toggler control, the search filter panel will be expanded to full height (or collapsed to a default height) accordingly.

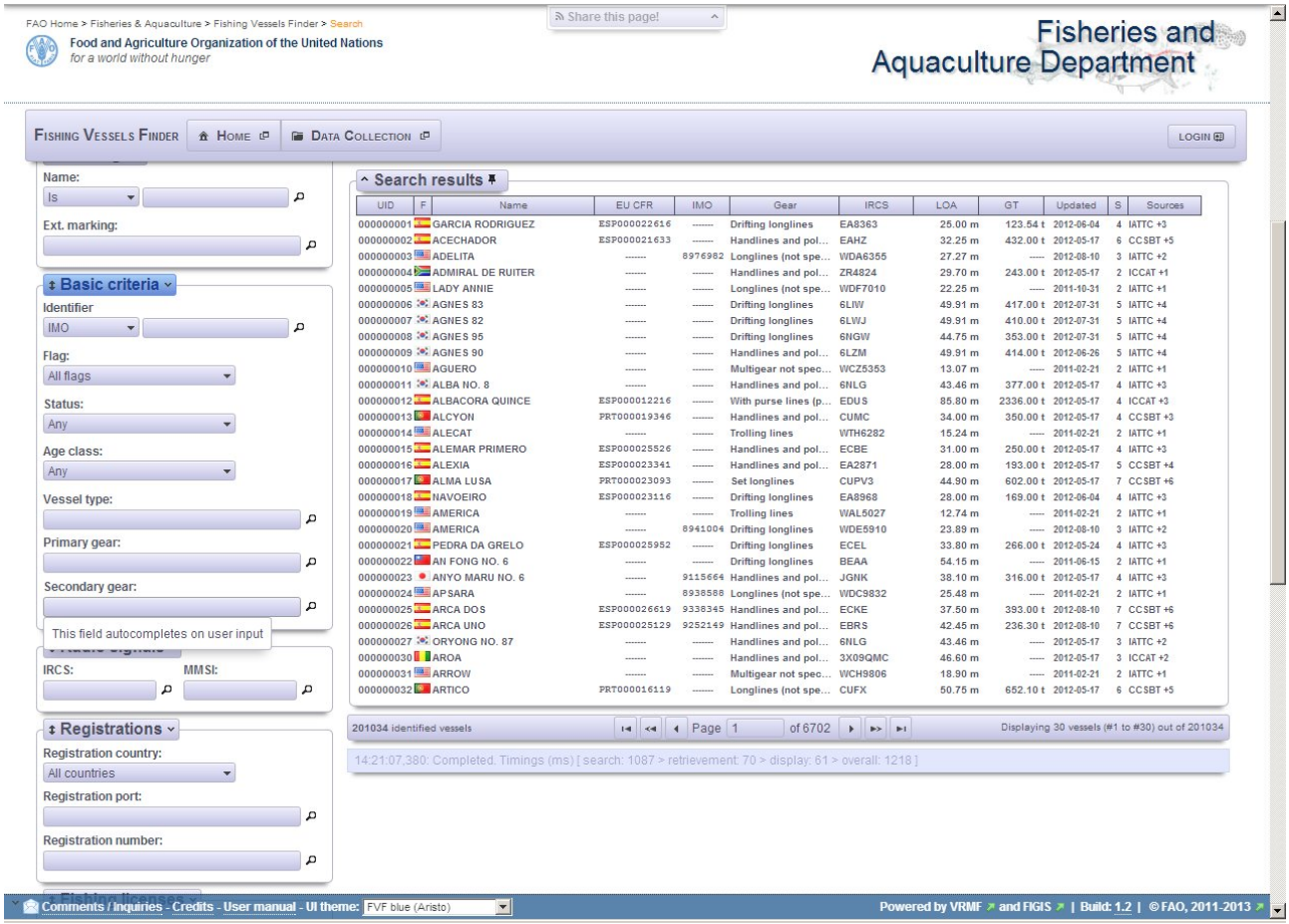
When the search filter panel is fully expanded, users will notice that scrolling down the web page to reach the last available filtering criteria will have the effect of also scrolling the search results panel so as it will always appear at the top of the viewport, regardless of the point at which the page was scrolled down.

This behaviour can also be changed by using another search results panel control (see the red outlined box in picture 48) that allow users to *pin* the search results panel so it will

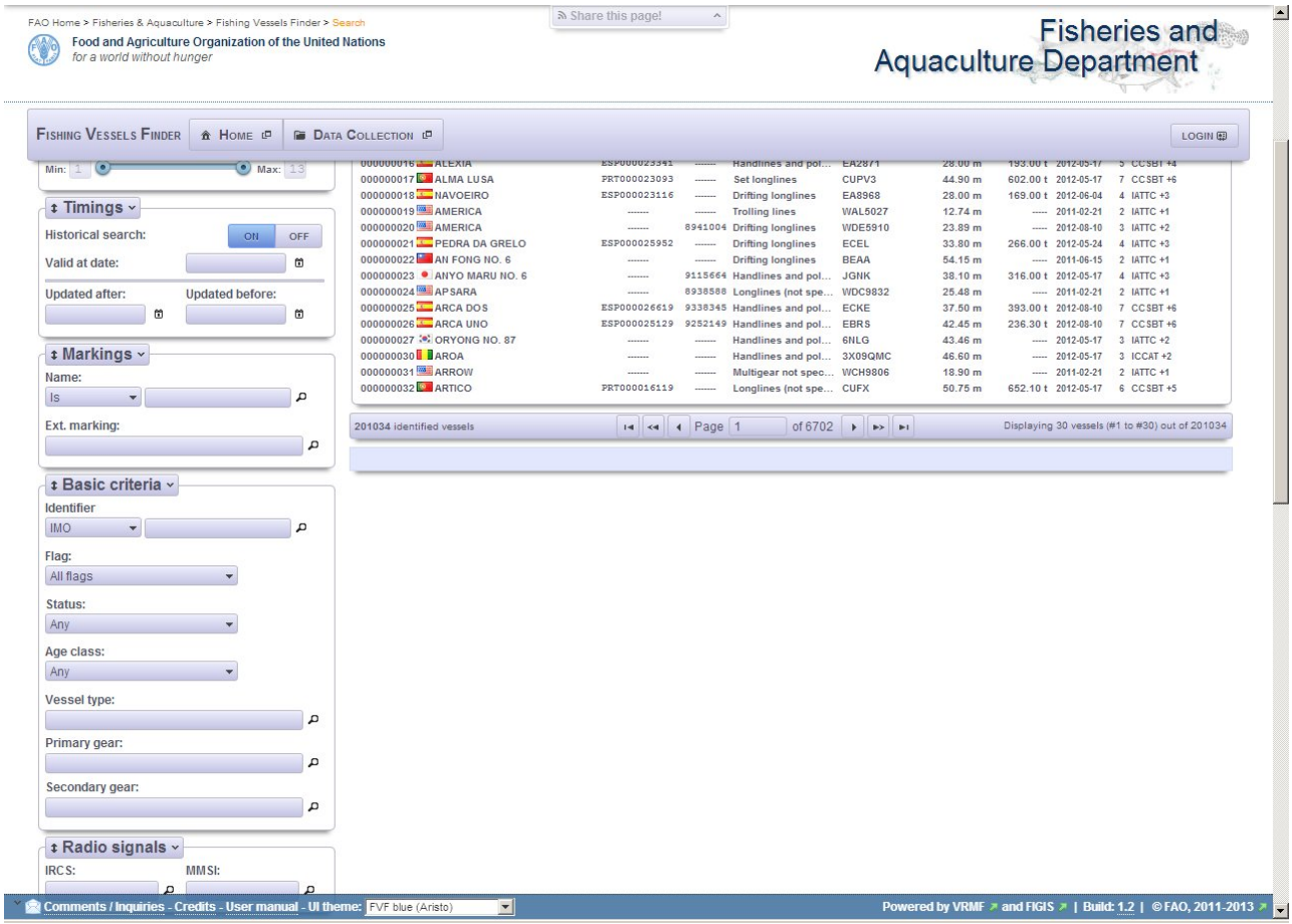
follow the page scrolling and be always visible at the top of the viewport or *unpin it* to a fixed position (top of the web page, possibly disappearing from the viewport if users scrolls the page to the bottom, when the search filter controls are fully expanded).

48. Search results panel pin / unpin control

An example of pinned / unpinned search results panel (when the search filter panel is fully expanded) is displayed in pictures 49 and 50 respectively.



49. Pinned search results panel (with page scrolled down)



50. Unpinned search results panel (with page scrolled down)

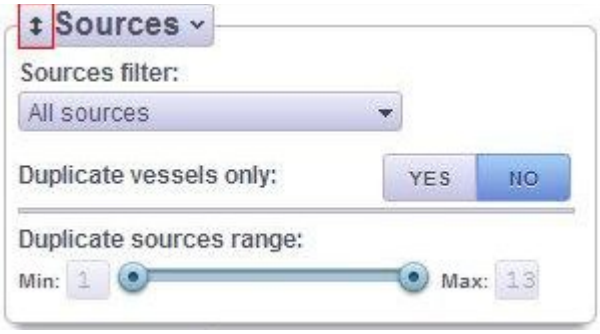
When in '*Advanced*' or '*Basic*' search modes, users have also the option to collapse / expand each of the search filters field sets and rearrange their placement.

To achieve the first result, it is necessary to double click on the field set legend (see picture 51 to see an example of collapsed fields et).

51. Example of a collapsed field set in the search filters panel

To re-arrange a field set position, users must click on the double-headed arrow (see red outlined box in picture 52) and move the mouse up or down while holding clicked the left mouse button.

Field set collapsed status as well as rearranged positions are kept as preferences set by the users even during subsequent accesses to the FVF. To restore their original configuration, use the '*Reset*' button at the bottom of the search filters panel.



52. Field set position rearrangement controls

9.2 REST API

The FVF vessel details can also be accessed directly, via a simple REST[3] API consisting in HTTP GET requests to specially forged URLs with different purposes.

9.2.1 Vessel details by UID

As already said, each grouped vessel in the FVF has a UID (Uniform IDentifier) consisting of a sequence of nine digits (from 0 to 9).

Users that want access to the vessel details for a specific UID should simply point their browser to the following URL:

- http://www.fao.org/figis/vrmf/finder/!/display/vessel/UID/{vessel UID}

where {vessel UID} is a zero-padded (to nine digits in length) vessel UID as in:

- http://www.fao.org/figis/vrmf/finder/!/display/vessel/UID/000000002

that will grant access to vessel details for UID #2.

9.2.2 Vessel details by IMO number

To simply check (and display, if it can be found) whether the FVF stores details for a vessel with a given IMO number, users should simply point their browser to the following URL:

- http://www.fao.org/figis/vrmf/finder/!/display/vessel/IMO/{IMO number}

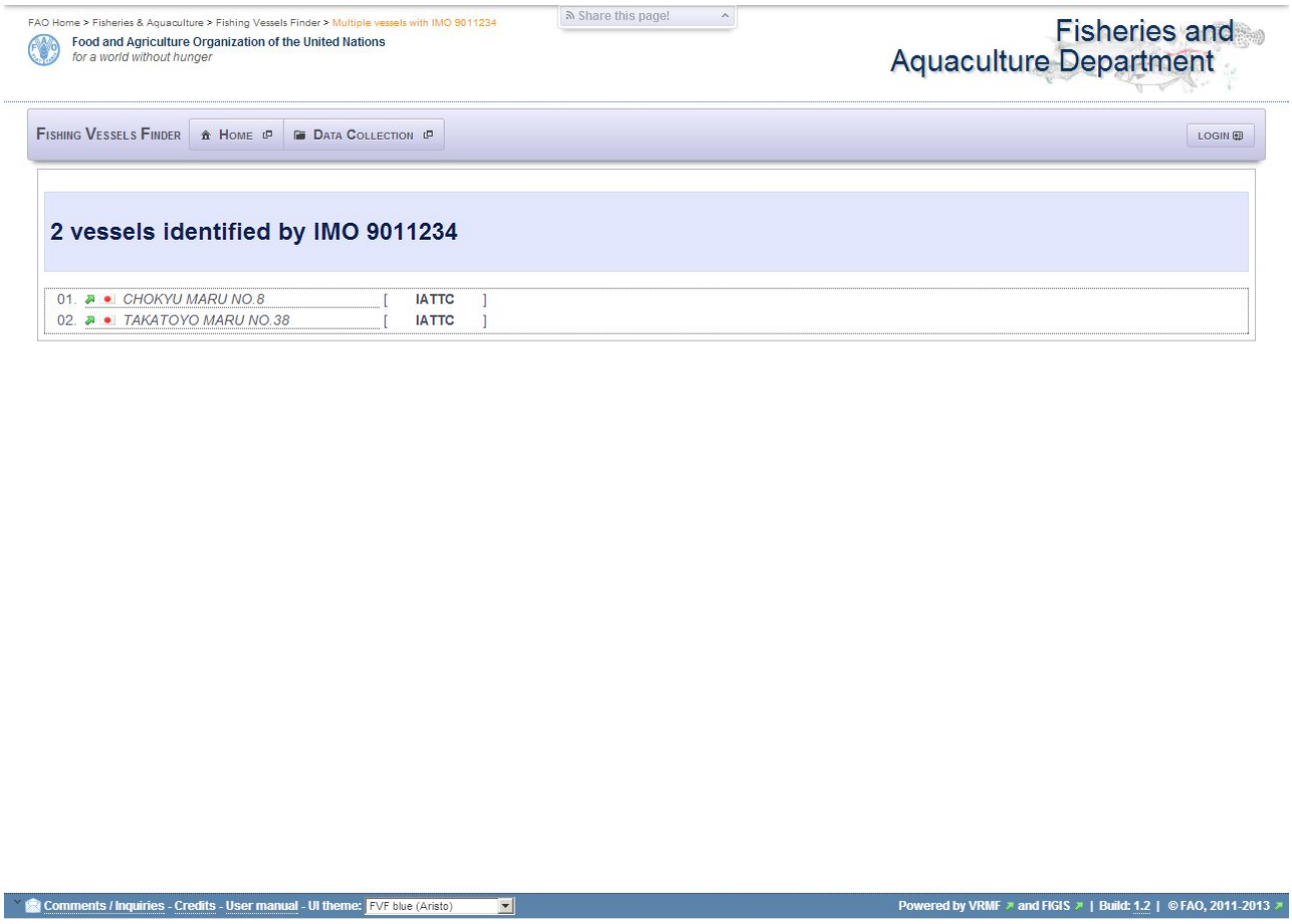
where {IMO number} is the user-selected IMO number (seven digits) as in:

- http://www.fao.org/figis/vrmf/finder/!/display/vessel/IMO/8976982

that will grant access to vessel details for an FVF vessel having IMO 8976982 (if any)

In some (rare) circumstances, multiple grouped vessels might have the same IMO number although having different UID. In such cases, when using the FVF REST API to access vessel details for these IMOs, users are presented with a disambiguation page that looks like the following (for IMO 9011234):

3 Representational State Transfer, see http://en.wikipedia.org/wiki/REST



53. FVF disambiguation page (REST API)

In such circumstances, users might want to choose one among the two (or more) proposed vessels according to the additional details they have available.

9.2.3 Vessel details by EU CFR

Exactly as for the IMO number, users do have the option to search and display details for vessels having a given EU CFR by using the following REST URL:

- http://www.fao.org/figis/vrmf/finder/!/display/vessel/EU_CFR/{EU CFR}

where {EU CFR} is one valid EU identifier consisting of the ISO-3 code for one of the EU countries followed by 9 digits as in:

- http://www.fao.org/figis/vrmf/finder/!/display/vessel/EU_CFR/ESP000022616

that will grant access to vessel details for an FVF vessel having EU CFR ESP000022616 (if any).

9.2.4 Vessel details by original source identifier

The same logic as for IMO number and EU CFR also applies to any data provider assigning a unique identifier to their vessels (as long as these are incorporated in the FVF

database).

Currently, such data providers include: **CCAMLR, CCSBT, IATTC, ICCAT, IOTC, WCPFC** and **FFA** and users willing to directly access vessel details for an FVF vessel having one of these data provider ID can use the following REST URL:

- http://www.fao.org/figis/vrmf/finder/!/display/vessel/{SOURCE}_ID/{SOURCE_ID}

where {SOURCE} is one of the available data provider ID as reported above and {SOURCE_ID} is one valid original vessel identifier in the format assumed by the corresponding source.

Examples:

- http://www.fao.org/figis/vrmf/finder/!/display/vessel/IOTC_ID/IOTC000448
  will grant access to vessel details for an FVF vessel having IOTC ID set to IOTC000448 (if any).
- http://www.fao.org/figis/vrmf/finder/!/display/vessel/ICCAT_ID/AT000KOR00049
  will grant access to vessel details for an FVF vessel having IATTC ID set to AT000KOR00049 (if any).
- http://www.fao.org/figis/vrmf/finder/!/display/vessel/WCPFC_ID/917
  will grant access to vessel details for an FVF vessel having WCPFC ID set to 917 (if any).

and so on.